Utah Telehealth Network

May 7, 2007

Federal Communication Commission
445 12th Street SW
Washington, DC 20554

Dear Chairman Martin and FCC Commissioners:

The University of Utah on behalf of the Utah Telehealth Network (UTN) is pleased to submit this proposal for the FCC Rural Health Pilot Project. UTN and its many healthcare and state partners have developed this proposal entitled "Utah ARCHES - Advancing Rural Connections for Healthcare and E-health Services".

Utah's multiple healthcare entities have a long history of working together to promote telehealth services to rural Utah citizens. The UTN Advisory Board will oversee implementation of the Project. This board has broad representation from healthcare constituents in rural and urban Utah, as well as from partner organizations such as the Utah Education Network, a statewide education network.

UTN has led telehealth efforts in Utah since 1996. Its members include non-profit rural hospitals; community health centers on the Navajo reservation in southeast Utah; all the local health departments in the state; Intermountain Healthcare, a large integrated healthcare network with hospitals and clinics throughout Utah and southwest Idaho; and University Health Care representing University Hospital and Clinics.

Utah faces unique challenges of rugged geography, long distances and the marked rural/urban disparity of population and specialty healthcare services. UTN has sought to reduce the disparity in healthcare services through its network.

If awarded, this project will enable UTN and its partners to increase bandwidth and network reliability to healthcare facilities throughout rural Utah.

Thank you for your consideration of this proposal from the Utah Telehealth Network and the University of Utah.

Sincerely,

Marta J Petersen

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Director, Utah Telehealth Network

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Utah ARCHES

Advancing Rural Connections for Healthcare and E-health Services

Proposal to the Federal Communications Commission
Rural Health Care Pilot Program
WC Docket No. 02-60
Submitted May 7, 2007

Submitted by the University of Utah, on behalf of the Utah Telehealth Network

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Index of Required Information

The FCC requested that the information listed below be included in proposals. Information addressing these specific areas can be found on the designated pages.

Project Abstract

We propose to improve the quality of healthcare for the citizens of Utah by building upon the existing IT infrastructure and increasing broadband capacity in order to advance innovative E-health services.

Organizations

The University of Utah, on behalf of the Utah Telehealth Network, will be legally and financially responsible for administering the project. Intermountain Healthcare will share leadership of the project. Key partners include the Utah Navajo Health System, the Utah Hospitals and Health Systems Association, Association of Utah Community Health, Utah Association of Local Health Officers, the State of Utah, the Central Utah Clinic and the Utah Education Network. The project will be coordinated under the leadership of the Utah Telehealth Network Advisory Board.

Utah's Strengths

The Utah Telehealth Network (UTN) has an eleven-year history of connecting hospitals, clinics, health departments and health systems via T1 lines. Intermountain Healthcare, a national leader in the innovative use of health data to improve patient outcomes, has been recognized as one of the country's "Most Wired" health care organizations. The Utah Navajo Health System has embraced telehealth as it provides comprehensive healthcare services, community education, and outreach programs in the largest geographic county in the United States. The sole specialty pediatric hospital and only medical school in the Intermountain West are located in Salt Lake City, which serves as a medical hub for the region.

Utah's Needs

A concentration of physicians and specialty health care services in Utah's four county urban area poses challenges for the state's rural and frontier communities. E-health, including telehealth and health information technologies, provides a means for remote health care providers to access resources and services. As the demand and use of telehealth technologies increases, sites are outgrowing their T1 lines. The transition from paper-based patient records to electronic health records, as well as the increasing use of telehealth for emergency medical services, neccesitates increased reliability of health networks. Today's infrastructure does not support the required level of reliability in all parts of Utah.

Project Goals

1. Foster collaboration between health networks within the state and region to improve patient care, health professions education and training, and public health.
2. Expand telehealth and telemedicine services throughout rural Utah.
3. Facilitate the adoption of Health Information Technology (HIT) in rural Utah.
4. Increase educational opportunities for health care providers in their communities.

Technical Implementation Strategies

1. Re-design the existing IT infrastructure to create an expanded, more unified, scalable statewide healthcare network.
2. Increase broadband capacity to rural health care facilities.
3. Increase network reliability to support critical patient care applications.
4. Integrate Utah's health networks and resources into a unified infrastructure.
5. Maintain network efficiency through coordinated management among partners.

Project Plan and Timeline

To begin planning for a future network that will link a majority of Utah's health care facilities, 210 facilities were identified, mapped, and grouped into regions. Initial telecommunications designs were generated and price estimates obtained. In Year 1, a rigorous RFP process will be conducted, contracts negotiated, and backbone infrastructure improvements begun. Where possible, "early adopter" sites will begin migrating from T1 to Ethernet (or comparable) technology. In Year 2, backbone infrastructure improvements will be completed and additional sites will migrate to Ethernet. We anticipate connecting 80 health care facilities during the two year pilot.

Budget

An estimated budget for Year 1 will be $6,778,183 and Year 2 will be $3,864,122, for a project total of $10,642,305, of which funding to support 85% of the costs is requested from the FCC. The remaining 15% of the costs will be borne by a combination of the individual sites, key partners, and from an existing line item in the state budget dedicated to the Utah Telehealth Network. In addition, one-time funds may be requested from the Utah legislature.

Request for Waivers

1. Utah requests a waiver for the requirement that health care facilities pay 100% of the costs up front, then be reimbursed 85% at a later time. We ask that the FCC allow contracts to be negotiated with the telecommunications companies so that health care facilities only pay the 15% (or a USAC-approved percentage).
2. Utah requests a waiver for the requirement to use only eligible telecommunications providers and allow reimbursement to the non eligible providers ONLY IF, after a competitive RFP process, it is determined that a non-eligible provider is the only viable option and with USAC's advance approval on a site-by-site basis.

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Lead Organizations and Key Partners

The following organizations will implement the Utah ARCHES Project:

The University of Utah, on behalf of the Utah Telehealth Network (UTN), will be legally and financially responsible for the conduct of the activities supported by the pilot program.

The Utah Telehealth Network Advisory Board will provide oversight of the project.

The 15-member board representing the diverse health care community served by UTN.

Intermountain Healthcare will share leadership of the project and responsibility for the conduct of the activities supported by the pilot program.

Intermountain Healthcare, a non-profit health care system of 21 hospitals and over 130 clinics.

Utah Navajo Health System (UNHS) will have representation on the project management team and will co-manage, with UTN, project infrastructure improvements in southeast Utah.

UNHS is an Indian-owned and operated system of community health centers.

The Central Utah Clinic (CUC) will have representation on the project management team and will participate in exploration of connecting a for-profit health care provider for a fee that 1) is cost-effective, therefore worthwhile, and 2) ensures that for-profits pay their fair share.

CUC is a for-profit medical group serving Central Utah rural communities.

Utah Hospital and Health Systems Association (UHA) will have representation on the project management team and serve as a project liaison to their constituency.

UHA represents member hospitals and health systems.

Association for Utah Community Health (AUCH) will have representation on the project management team and serve as a project liaison to their constituency.

AUCH is a primary care association representing Utah community health centers.

Utah Association of Local Health Officers (UALHO) will have representation on the project management team and serve as a project liaison to their constituency.

UALHO represents local public health departments.

Utah Department of Health will have representation on the project management team and serve as a project liaison to their constituency.

Utah Department of Technology Services will have representation on the project management team and lend its technical expertise to the planning and implementation of the project and serve as a possible provider for back-up connectivity.

The Department of Technology Services, headed by the State Chief Information Officer, maintains a statewide telecommunication network for state departments and agencies.

The Utah Education Network (UEN) will have representation on the project management team and lend its technical expertise to the planning and implementation of the project, provide network access to Internet2 and National Lambda Rail and serve as a possible provider-of-last-resort for connectivity where no other options exist.

UEN maintains a statewide educational network providing videoconferencing for classwork and internet connectivity to Utah's schools.

Background: Strengths and Needs

Utah's Strengths

The strengths of Utah's proposal include its history of a successful statewide telehealth network, strong healthcare systems providing both primary and specialty care to the state, and participation of organizations dedicated to providing care to underserved populations in rural Utah.

Utah has a Long Track Record in Telemedicine

Utah has participated in telemedicine since 1988, beginning with Intermountain Healthcare's participation in the Telemedicine Spacebridge, a satellite-mediated, audio-video-fax link between four United States and two Armenian and Russian medical centers, which allowed remote American consultants to assist Armenian and Russian physicians manage medical problems following the 1988 earthquake in Armenia and the 1989 gas explosion near Ufa (Houtchins BA et al. Prehospital Disaster Medicine 1993;8:57-66). Subsequently, the Utah Telehealth Network (UTN) was started in 1996 and has grown from a solitary remote clinic linked to the hub at the University of Utah Health Sciences Center to a statewide telehealth network involving over 40 health care entities. A map showing communities in Utah with telehealth facilities is in the Appendix.

The Utah Telehealth Network (UTN)

UTN has broad representation that exemplifies our 10-year history of collaboration with health care systems in the state. UTN members include independent rural hospitals, hospitals in various health care systems (University Health Care, Intermountain Healthcare, LifePoint Hospitals Inc., Community Health Systems Inc) and the Native American owned and operated Utah Navajo Health System (UNHS) that operates four Community Health Clinics on the Utah strip of the Navajo Nation. Other members include twelve local health department offices throughout the state, the Utah Department of Health and the Utah Hospital Association. As outlined in this proposal, many of the health care organizations listed above have collaborated to develop the current network and will continue to work together to expand and improve the network for the future.

UTN has nine staff members dedicated full-time to the network and telehealth activities. The director (Marta Petersen, M.D.) and manager (Deb LaMarche) have worked for UTN since its inception. UTN supports delivery of innovative clinical services including acute stroke intervention (telestroke) and emergency burn assessment (funded by an NIH grant) as well as orthopedic, pediatric, dermatology, and radiology specialty services. A novel telepharmacy program in southeast Utah

addresses the nationwide pharmacist shortage by enabling pharmacists to oversee pharmacy technicians in two frontier counties in southeast Utah.

UTN supports delivery of continuing education including Pediatric Grand Rounds from the sole specialty pediatric hospital in the intermountain west, Primary Children's Medical Center; diabetes education through monthly Diabetes Brown Bag Lectures by the Utah Department of Health and bioterrorism preparedness and training by the Utah Health Alert Network. The University of Utah College of Nursing offers a doctoral degree in Nursing Oncology delivered to practicing nurses throughout the country using IP-based videoconferencing, funded in part by a 5-year federal grant.
http://www.utahtelehealth.net

Participating Healthcare Organizations

Intermountain Healthcare

Intermountain is an integrated healthcare system of 21 nonprofit hospitals and over 130 clinics in Utah and Idaho and is nationally recognized as one of the top integrated healthcare systems in the nation. Intermountain is known for its innovative use of the electronic medical record and cutting edge quality and safety initiatives. It recently received a "Most Wired" designation by the American Hospital Association's Hospitals and Health Networks.

In addition, Intermountain has recently partnered with the Huntsman Cancer Institute (HCI) and with GE Healthcare. The alliance with HCI combines the research capabilities of HCI and Intermountain's nationally recognized clinical quality program and clinical program development. Intermountain's partnership with GE Healthcare will develop a next-generation electronic medical records system, making patient care safer, more affordable and more convenient.

Telemedicine-related activities currently underway at Intermountain include the use of videoconferencing to provide American Sign Language interpretation for deaf patients, funded by a federal grant; use of videoconferencing in conferences such as Care Quality Conferences to discuss best practices in medicine with rural facilities; and teleradiology with radiology 'read centers' across the system.
http://www.intermountainhealthcare.org

University of Utah Health Sciences

The University of Utah Health Sciences is comprised of the School of Medicine, the Colleges of Nursing, Pharmacy and Health, the Eccles Health Sciences Library and University Health Care. The mission of the Health Sciences includes patient care, research, education and outreach. *University Health Care* represents the patient care component of the enterprise and includes the University Hospitals and Clinics, including 10 community-based clinics; the Utah Orthopaedic Center; the Moran Eye Center, the University Neuropsychiatric Hospital and the Huntsman Cancer Institute.

In 2006, University Health Care was recognized as one of "America's Best Hospitals" for the 13th year.

UTN plays an integral part in the outreach role of University Health Care and the Health Sciences. Rural healthcare initiatives such as telestroke, telepharmacy, teleradiology and echocardiography have provided vital services to underserved areas of the state. New initiatives include electronic transmission of radiology images to University Emergency Department prior to patient transfer and the Neuropsychiatric H.O.M.E. project to provide psychiatric services to children and adolescents in southeast Utah. Innovative educational initiatives such as the Distance Learning Doctoral Programs offered by the College of Nursing. Beginning in the fall 2008 semester, the College of Nursing will be admitting students from around the country who want to pursue a PhD from the University of Utah but who are unable to move to Utah. During the past 4 years they have piloted using internet-based desktop videoconferencing to deliver courses with great success. The College of Nursing is also a member of NEXus, a partnership among select Western Institute of Nursing institutions to facilitate enrollment in doctoral courses not available on your home campus. Through NEXus, participating western nursing institutions have identified courses that are available at a distance that are open for enrollments from partner institutions.
http://healthcare.utah.edu

Utah Navajo Health System (UNHS)

UNHS is an Indian-owned and operated non-profit healthcare system that accomplishes its mission by providing direct medical, dental, and behavioral healthcare, extensive ancillary services, public health nursing, and comprehensive community education and outreach programs. UNHS is a federally designated Community Health Center (CHC) serving San Juan County with a population of approximately 14,000, a designated Tribal Organization and a Public Law 93-638 (Self Determination) Indian Health Service contractor (one of four in the lower 48 states). UNHS operates four community health centers located throughout the Utah Strip of the Navajo Nation, within San Juan County, Utah.

UNHS is a leader in rural health, forging partnerships with distant agencies and organizations to improve patient care services. Despite its geographic limitations, UHNS has been proactive in finding innovative technological solutions to meet the health care needs of the Navajo people. UNHS has become a leader in rural healthcare by seeking new approaches to providing healthcare with the aim of improving patient care services in some of the most remote communities in the United States.

Through UTN, UNHS is able to hold meetings and conferences between all four UNHS clinic sites where physical distance between facilities can be as much as 233 miles. UNHS also uses UTN to access specialty medical care providing critical specialty care to patients who otherwise would not have access to such care due to economic factors and/or lack of transportation.

Association for Utah Community Health

The Utah Association for Utah Community Health (AUCH) supports and represents its member organizations and works to increase access to health care for medically underserved populations in Utah. Established in 1985 as a 501(c)(3) non-profit corporation, AUCH is the primary care association for the state of Utah. AUCH members include Federally Qualified Health Centers (FQHC) and other providers who strive to meet the needs of the medically underserved. AUCH and its member organizations are part of a statewide and national movement to reduce barriers to health care by enhancing primary care service delivery through prevention, health promotion, and community participation.
http://www.auch.org/

Utah Association of Local Health Officers

UALHO represents the Utah's twelve local health departments, each of which provide a variety of direct public health services. The primary purpose of the local Health Departments is to protect and promote the health, safety and well being of all citizens in the state. Local health departments develop partnerships with private, volunteer, and government health organizations in providing public health services directly to local citizens.
http://health.utah.gov/lhd/index.html

The Utah Department of Health

The Utah Department of Health (UDOH) is responsible for assessing the health of Utah's population and therefore is a custodian and user of large amounts of electronic health information. UDOH's Office of Primary Care and Rural Health is a health resource for Utah's rural, multicultural and underserved communities. The Office coordinates federal, state, and local efforts aimed at improving the health of Utah's rural, medically underserved, and multicultural residents. UDOH supports distance learning for Utah's healthcare and public health workforce. The Department of Technology Resources (DTS) provides IT support and coordination for all state agencies, including the Department of Health.
http://health.utah.gov/

Utah Hospital and Health Systems Association (UHA)

UHA represents member hospitals and healthcare systems in the State of Utah. UHA serves as an advocate in legislative healthcare issues for its members, as well as a valuable resource for information. The UHA Rural Hospital Council and Health Information Technology Committee are addressing the challenges faced by rural hospitals as they move toward the adoption of health information technology.
http://www.uha-utah.org/

The Central Utah Clinic

The Central Utah Clinic, a for-profit health care provider, is comprised of over 90 physicians offering care in 19 specialties. Although Central Utah Clinic offers general medical care, the majority of its physicians are specialists. Because of its commitment to providing quality patient care, Central Utah Clinic actively works to ensure adequate healthcare resources exist in the communities it serves. In a number of specialties, Central Utah is currently the only provider in its market area.

Based in Utah County, Central Utah is committed to providing patient care to residents in rural communities. In 1978, Central Utah physicians established partnerships with local clinics located across central Utah from Beaver and Richfield to Heber City and Delta. Central Utah physicians travel to these clinics at least monthly to provide patients with care in a number of specialties including cardiology, nephrology, oncology, sports medicine, and orthopedics. Today Central Utah physicians continue to provide the latest treatments to patients in these areas.
http://www.centralutahclinic.com/

Additional Utah Health Information Resources

Utah Health Information Network (UHIN)

An Electronic Commerce Coalition since 1993, UHIN is a broad-based coalition of Utah health care insurers, providers and other interested parties, including state government, who have come together for the common goal of reducing health care costs through the use of electronic data interchange, allowing parties to exchange data in a standard format using standard codes. This allows for administrative costs savings and opens the door to improving patient care and safety. UHIN operates as a centralized, secure network (private post office) through which health care transactions pass in Utah. It is one of five recipients of the federally-awarded State and Regional Demonstration Grant by the Agency for Healthcare Research and Quality to establish a state-wide health information exchange.
http://www.uhin.com

HealthInsight

As the Quality Improvement Organization (QIO) for Utah, HealthInsight is invested in the adoption of health information technology (HIT) in Utah, especially geared towards helping health care providers use health information technology (HIT) more effectively in the management of the care delivery process. Through their Doctors Office Quality – Information Technology (DOQ-IT) project, they have assisted 180 clinics through various stages of implementation of electronic health records. As partners on research grants, including the AHRQ Value grant and the CDC grant, Intermountain Project on Antimicrobial Resistance and Therapy, HealthInsight has implemented electronic decision support mechanisms in rural clinics.
http://www.healthinsight.org

Department of Biomedical Informatics, University of Utah

Utah has long been recognized as a leader in the field of Medical Informatics. The Department of Biomedical Informatics was established in 1972 in the University of Utah School of Medicine and is internationally recognized for its contributions to biomedical informatics research and training. As one of the largest informatics training programs in the world, our faculty and students are a diverse group with a wide range of experiences and interests. The HELP hospital information system, developed over 25 years ago has become an essential part of the daily operation of Intermountain Healthcare's LDS Hospital, a 500-bed tertiary-care hospital. Since 1983, clinical applications have been available to improve the use of antibiotics and increase infection control.
http://uuhsc.utah.edu/medinfo/

Utah's Healthcare Networks: Current Architecture

Utah Telehealth Network

Designed as a hub and spoke network, most member health care facilities connect to the UTN hub at the University of Utah Health Sciences Center via a T1 line. Network connectivity between UTN and Intermountain Healthcare's network consists of 100 MB of fiber located in a walkway between University Hospital and the adjacent Primary Children's Hospital, an Intermountain Healthcare facility. Part of the University of Utah Health Sciences Center, UTN resides within Information Technology Services, a 200+ person department that lends expertise and assistance to UTN.

With UTN, a rural health care facility can access multiple resources with a single T1 line. For example, the T1 line into Allen Memorial Hospital in Moab (243 miles southeast of Salt Lake City) is used to 1) share a pharmacist with San Juan Hospital in Monticello, 54 miles south of Moab; 2) send teleradiology images to St. Mark's Hospital in Salt Lake; 3) receive telemedicine consultations from orthopedic surgeons at Shriners Hospital in Salt Lake; 4) work with a child psychiatrist at the University of Utah (all in Salt Lake) for services; and 5) participate in Diabetes Education programs through the Utah Department of Health in Salt Lake City.

Intermountain Healthcare

Intermountain Healthcare employs data network connections to 21 hospitals and over 130 clinics and Instacare facilities located throughout the state of Utah and southwest Idaho. Some notable facilities include: Primary Children's Hospital, LDS Hospital (both located in Salt Lake City) and Intermountain Medical Center (new flagship facility). Intermountain's Network connections are deployed in a "star" format – with all wires connecting from local and remote facilities to a centralized data center facility, LakePark, located in Salt Lake City with a fully redundant data center located in Ogden.

Intermountain's vision, to deliver the best and highest quality clinical healthcare in a consistent way to every delivery point relies heavily on network infrastructure. The network provides the vehicle and is the "enabler" that allows delivery of quality healthcare across geographic boundaries, and the realization of that vision. Additionally, "best and highest quality" translates into the need for a key support model. Intermountain's operational support staff consists of over a hundred system technicians – many of them located in facilities; providing quality support at the point of service delivery.

Other Utah Networks

Utah Education Network

In addition to healthcare networks, Utah also has a statewide educational network, the Utah Education Network or UEN. UEN has a rich 30-year tradition of providing distance learning and educational technology opportunities for students and instructors of all ages in Utah. UEN manages telecommunications and public TV broadcast services statewide that ensures Utah's learners receive the finest education regardless of place or time.

With administrative offices located on the University of Utah campus, UEN works across the state to connect every Utah public school, college, and university together through the UEN Wide-Area-Network (WAN) leased from Qwest Communications and Utah's fourteen independent rural telephone companies. UEN also supplies Internet connectivity to schools, public libraries, and state government through contracts with commercial ISP providers. UEN has a successful record of working with the FCC E-rate program, which provides discounts for schools and libraries to obtain affordable Internet and telecommunications services: UEN's E-rate reimbursements will surpass $9 million in FY2008.

Since 1986, UEN has operated and maintained the EDNET system, a live two-way interactive video and audio terrestrial system that provides high school, college, and non-traditional students expert instruction in subjects not offered by their local public school. EDNET began as a coordinated effort among the state's higher education institutions to share needed coursework and training. In 1990, the Utah State Legislature mandated the EDNET system reach all public high schools and funded the system's expansion statewide.

UEN has extensive internet connectivity including Internet2 via an OC-12 (622 Mb/s) to Denver, an Internet2 hub, and National Lambda Rail served to the Denver Front Range GigaPop hub.
http://www.uen.org

Utah Department of Information Technology Services (State ITS)

State ITS supports connectivity between state agencies and other government organizations in Utah. State ITS operates a Wide Area Network (WAN) that provides enterprise-wide, intra-state network services. The ITS WAN functions as a private,

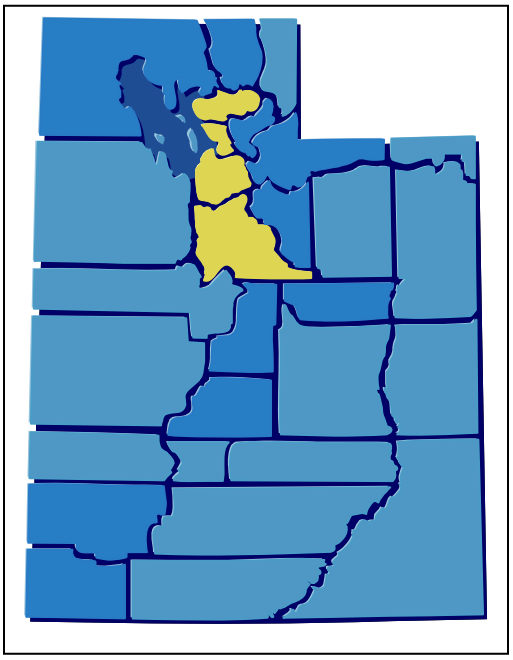
fault tolerant State network connecting facilities in geographic locations throughout the state, along with gateway services to the public Internet. ITS also maintains a statewide microwave system, architected for redundancy in order to maintain communication in the event of a disaster or other failure.

State ITS has existing connectivity with both the Utah Education Network and the University of Utah Network.
http://www.its.state.ut.us/

Utah's Needs

Healthcare Issues

Health services and education in Utah and the intermountain West are concentrated in a four-county area



Utah has unique challenges due to its rugged geography and population density. Utah's population density is greatest in a four county region termed the Wasatch Front that borders the Wasatch Mountains in northern Utah. The Wasatch Front is comprised of Salt Lake, Utah, Davis and Weber counties. In 2005, 75% of the state's population of 2,469,585 people resided in these four counties representing 4.4% of the state's landmass. Conversely, 25% of the population lives in greater than 95% of the state. Utah has 29 counties (see below), of which 4 are urban (greater than 100 persons/sq mile, shown in yellow), 12 are rural (greater than 6 and less than 100 persons/sq mile; dark blue) and 13 are frontier (less than 6 persons/sq mile, light blue).

Physician Shortage

Utah has a physician shortage. It has 2.0 doctors/1,000 residents compared to the U.S. average of 2.6 (2002 data). Nineteen of its 29 counties are designated as full-county geographic or low income primary care health professional shortage areas (HPSA). Three counties along the Wasatch Front are designated as partial-county HPSAs and seven counties are undesignated. (Primary Care HPSA Map, Appendix)

According to a 2006 report by the Utah Medical Education Council ("Utah's Physician Workforce", http://www.utahmec.org), a significant urban-rural disparity in the geographic distribution of physicians exists in Utah. While 25% of Utah's population lives in rural and frontier counties, only 12% of the physician workforce provided services in these areas. Primary care physicians make up over 43% of the workforce in rural Utah.

Specialty Care in Utah

Specialty healthcare services are concentrated along the population-dense Wasatch Front. Utah's two Level I trauma (University Health Care and Intermountain Healthcare) and Primary Children's Medical Center, the only pediatric specialty hospital in the intermountain west are located in Salt Lake City. There are numerous examples of the rural-urban divide in specialty care in Utah. In the 25 rural and frontier counties there are no Internal Medicine physicians in 13, no pediatricians in 15, no pediatric subspecialists in 24, no neurologists in 24, no psychiatrists in 20 and no radiologists in 14 (2003 data).

Specialty services are similarly lacking in surrounding states. Patients from southern Idaho, western Wyoming, eastern Nevada, western Colorado and even Montana travel to the Wasatch Front for specialty care. Seventeen percent of inpatient admissions to University Hospital are from out of state.

Health Professions Training

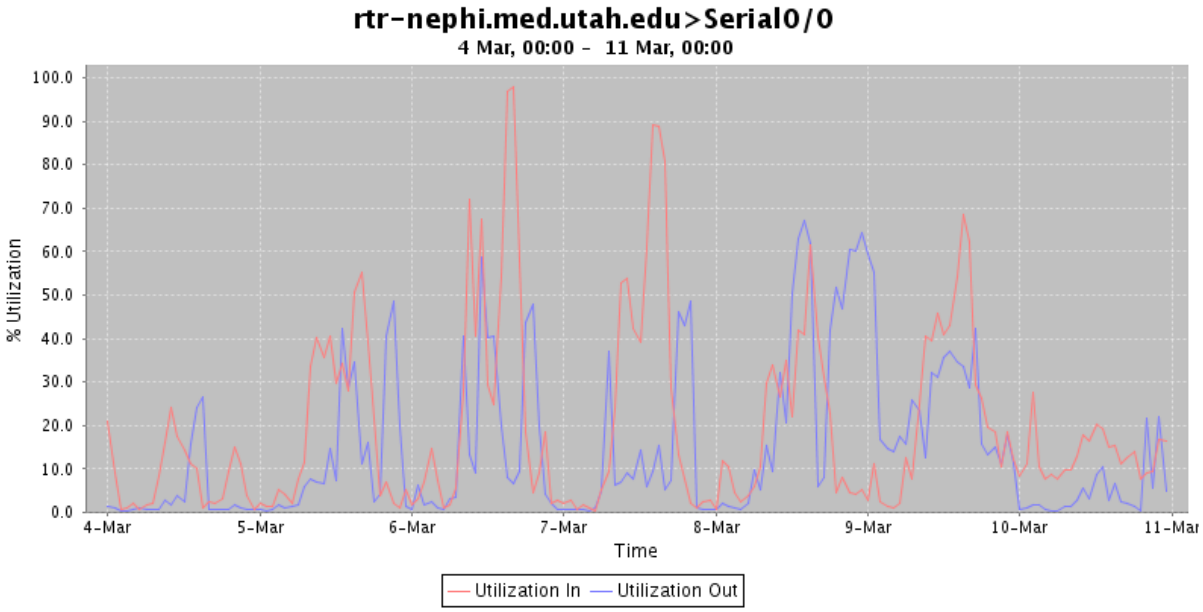
Training for healthcare providers is also centered in the four urban counties along the Wasatch Front. The University of Utah School of Medicine in Salt Lake City is the only medical school in the state and serves not only Utah but also the surrounding states of Idaho, Wyoming and Montana. Post-graduate residency programs in both primary and specialty care are located in the Wasatch Front in Salt Lake, Utah, and Weber counties. Bachelor degree nursing and pharmacist training are located along the Wasatch Front. A full listing of Utah Health Professions Training Programs and their locations are listed at: www.ahec.suu.edu/Health%20Careers%20Resources.htm.

Infrastructure Needs

In addition to the need for primary care and specialty services in rural Utah, limitations in telecommunication infrastructure presents challenges for rural healthcare facilities.

Rural hospitals and clinics are outgrowing their T1 lines.

Bandwidth requirements are rising with the transition to health information technology. Many rural health care facilities have a single T1 line to meet their basic operational, telehealth and health information technology needs. While best practices for network engineering consider a T1 to be saturated at 40%, UTN's network monitoring shows that our rural hospitals regularly ping 97% capacity when pushing large electronic records. A lack of capacity reduces the quality of other services like doctor to doctor teleconsults. The graphic below shows a typical week of utilization at Central Valley Medical Center in Nephi, Utah. Central Valley has not yet implemented an electronic health record, which will greatly increase network utilization.



Many rural health care facilities now have practice management systems, digital radiology equipment, lab and pharmacy systems, email and Internet access. Dictation of patient visits is transitioning from the telephone to an electronic web- and server-based service. Electronic health record adoption has begun, with Utah's rural hospitals and clinics at varying stages of planning and implementation.

As telehealth services are layered on top of these other applications, the need for bandwidth increases. Traditionally videoconferencing has been conducted at 384 kbps, which is still considered adequate for meetings. However, connecting at higher speeds improves the quality of telemedicine encounters. University of Utah burn specialists prefer to connect at 768 kbps when assessing burns via telehealth.

Simultaneous transmissions can cause bandwidth bottlenecks. Time-sensitive telestroke, for example, requires live videoconferencing (minimum 384 kbps) between the rural ER and the specialist at the same time that the rural hospital is transmitting a CT scan to the specialist.

Newer CT machines are producing larger files that are requiring higher speeds to transmit quickly. Most rural hospitals do not have radiologists on site, especially for nights and weekends. Many rely on teleradiology services, especially for emergencies, which can require the rapid transmission of radiology images for multiple patients. Radiology studies, which range up to 150 Mb, can take up to 20 minutes to transmit with the current network of T1's. An Ethernet-based network will cut the time to 3 minutes.

The need for remote access is adding to network demand. Health care providers, both community-based and remote specialists, expect secure remote access into their systems. The electronic tools themselves are usually supported remotely by vendors, also requiring secure access. Rural hospitals and clinics often only have one IT staff person on-site. UTN supplements on-site IT staff with 24/7 network monitoring, IT security, and technical support.

Network reliability has become more critical

With the transition from paper-based records to electronic health information tools, health care providers must be able to access critical patient information whenever they need it, whether they are treating a scheduled patient or dealing with an emergency, whether they are at the same location as the patient or not.

The importance of network reliability has increased dramatically. The industry standard of "5 9's" requires that networks be up 99.999% of the time. This translates to an acceptable downtime of 5 minutes 45 seconds per year.

Today's reality is that network connections for rural health care facilities can go **down for hours at a time**, due to lightning strikes, backhoes inadvertently cutting through telecommunications lines, etc. This is problematic in parts of the state that have only one telecommunications pathway. For example, all telecommunications traffic from Salt Lake City to southeast Utah travels through the city of Price in central Utah. Twice in the past year, telecommunications problems in Price have cut all network links to Grand and San Juan Counties.

The need for improved reliability is crucial before the rural health care facilities in those counties can fully adopt electronic health records or depend on the network to support emergency patient care applications.

Increasing need to connect between health care facilities

Electronic health information tools are significant investments, especially for small rural hospitals and clinics. Instead of addressing this on an individual basis, development of centralized shared resources will offer a vehicle for hospitals to utilize some of these tools. Examples include:

- A regional Picture Archive Communication System (PACS) to store digital radiology images for multiple health care providers. A PACS system could be hosted at one location, with physicians, hospitals, and clinics accessing the stored images via UTN.
- Intermountain Healthcare's HELP system offers electronic results review of labs and other patient data for health care facilities outside of their network. Some of these providers, such as Southwest Community Health Center in St. George, Utah have expressed the need for improved connectivity to Intermountain system for access to HELP2 results review.

Shared electronic resources increase capacity needs and require both high-speed and reliable connections.

Traditional telehealth models connect rural facilities to urban health care providers. However there is a growing need to connect rural to rural.

- The Utah Navajo Health System (UNHS) operates four community health centers in San Juan County, one of the largest geographic county in the state. Patient records and practice management system are shared between the clinics. Since distances are long and travel can be difficult, UNHS uses

videoconferencing for staff meetings and training as well as for telehealth. In one month alone, they saved over 2000 miles in travel by using videoconferencing.

- Many rural hospitals, such as Beaver Valley Hospital in southwest Utah, manage satellite clinics in the surrounding communities. With the transition to electronic patient information, secure dedicated connections are a must.
- In Utah, the local health departments are expected to provide services over large geographic areas. For example, the Southeast Utah Local Health Department is responsible for an area that covers 17,000 square miles, an area the size of Massachusetts, Connecticut, and Rhode Island combined! Links between their offices are vital.

In summary, there is a need to connect existing sites at higher bandwidth, to bring new sites into the network, and to ensure robust connectivity between health systems. The network needs to be fast enough and reliable enough to accommodate the growing list of telehealth and HIT services. It needs to be a dedicated network, which offers more reliable transmission, better network monitoring and support, and coordinated security.

Regional telecommunications infrastructure limitations

Utah is a patchwork quilt of telecommunications companies. Qwest serves most of the urban areas and most of the Interstate-15 corridor that travels north-south through the state. Rural Utah has many small telecommunications companies that provide service to limited geographic areas, some as small as a single town. Today, a T1 line from Salt Lake City to a rural hospital can traverse 3-4 telecommunications companies. With the state divided up as it is, it creates a near monopoly for services, resulting in limited available options and service coordination in many areas of the state. The specter of the FCC Rural Health Care Pilot Program has captured the interest of these telecommunications companies. If the Utah ARCHES proposal is selected for the Pilot Program, we believe that a rigorous Request-for-Proposal process will improve both telecommunications options and pricing for rural health care providers.

In areas of rural Utah, the existing physical telecommunications infrastructure is limited to a single pathway, which is often at capacity. The most striking example for this is in southeast Utah. If a backhoe cuts the telecommunications lines between Price and Green River, which occurs with some regularity, all connections along a 300-mile path to the southeast are severed. A cut in the line impacts the following health care facilities in Grand and San Juan Counties: Allen Memorial Hospital, San Juan Hospital, San Juan Counseling, Blanding Family Practice, Montezuma Creek Clinic, Monument Valley Health Center, and the Navajo Mountain Clinic. It also impacts eleven schools and six city governments in the same area.

Even when operational, access to bandwidth in this area can be erratic. Moab, Utah, is a popular tourist destination in Utah's red rock country. During festivals and special events, such as the annual Jeep Safari, the hotels fill to capacity. When tourists take advantage of the hotels' free internet access, internet availability south of Moab is

impacted. This affects the hospitals and clinics south of Moab including Monticello and the four sites in the UNHS.

While southeast Utah provides the most dramatic example of current telecommunications limitations, it is not the only region in the state where rural health care providers face network challenges. The situation is not much different for the Bear Lake Community Health Center near the northern boarder with Idaho, the Delta Hospital in the west desert, or Kane County Hospital along the north rim of the Grand Canyon on the Arizona border. The Pilot Program would provide an opportunity to address the telecommunications needs of health care providers needs in a more powerful, comprehensive manner than could be accomplished one site at a time.

Purpose, Goals, and Technical Implementation Strategies

Statement of Purpose

We propose to improve the quality of healthcare for the citizens of Utah by building upon the existing IT infrastructure and increasing broadband capacity in order to advance innovative E-health services.

Project Goals

1. **Foster collaboration between health networks within the state and region to improve patient care, health professions education and training, and public health.**

   Increased network capacity and expansion to new rural healthcare facilities will enable the Utah Telehealth Network and its partners to further create communities of health care providers available to patients in rural Utah, facilitate public health reporting and emergency preparedness training, improve the quality of telemedicine videoconferencing throughout the region and strengthen ongoing collaboration with regional telemedicine networks including the Four Corners Telehealth Consortium and the Northwest Regional Telehealth Resource Center.

2. **Expand telehealth and telemedicine services throughout rural Utah.**
   A key technical goal is to increase broadband connectivity to existing Utah Telehealth Network sites and to explore cost-effective broadband connectivity to smaller healthcare facilities. Increased network capacity will increase rural access to emergency and specialty services such as telestroke, teleburn assessment, teletrauma between urban and rural emergency rooms, teleradiology and adult and pediatric specialty services located in the Wasatch Front.

3. **Facilitate the adoption of Health Information Technology (HIT) in rural Utah.**
   Increased network capacity to rural health care providers will support additional network needs of rural providers as they adopt electronic health records, decision support tools and practice management systems, development and implementation of shared HIT resources among rural providers, secure access to patient health information throughout the state and development of disaster recovery strategies.

4. **Increase educational opportunities for health care providers in their communities.**
   Increased network capacity will provide expanded opportunities for health care providers to develop, maintain and increase their skills through educational programming such as Grand Rounds and diabetes education; community-based health professions job training such as a Radiology Technician program from the Wasatch Front to rural regions and the Nursing Workforce Diversity program, a collaboration between the College of Eastern Utah-San Juan Center and the Utah Navajo Health System; and graduate-level health professions education throughout the state and region.

Project Technical Implementation Strategies

1. **Re-design the existing IT infrastructure to create an expanded, more unified, scalable statewide healthcare network.**

   1.1 Complete an analysis of i) Utah health care provider IT needs for the next 5-10 years, ii) Utah healthcare's existing IT infrastructure, and iii) the current state of telecommunications infrastructure in Utah.
   This step has been accomplished and is reflected in the 'Needs' and 'Technical Design' sections of the proposal.

   1.2 Re-architect the existing infrastructure and plan for growth.
   Project partners are searching for the best value in network technology for bandwidth, reliability, scalability, and cost. A framework has been developed that includes a model based around an urban core which connects the major networks; backbone connections from the core to regional aggregation points, and from the aggregation points to the health care facilities.

   Scalability is a key component of the project. As HIT use increase, individual health care facilities' IT needs are also increasing. As the sites grow, and as new sites join the network, the overall network infrastructure will need to accommodate the growth.

   1.3 Conduct a thorough Request-for-Proposals (RFP) process to solicit competitive bids for final network architecture and implementation.
   The Utah Education Network has provided a template for an RFP for Ethernet Services, the Title page and Table of Contents of which can be found in the Appendix. This template will be refined to use for the Utah ARCHES Project. Respondents to the RFP will be allowed to propose a statewide solution (not likely), a regional solution for a portion of the network (most likely), or a local solution for a specific endpoint.

2. **Increase broadband capacity to rural health care facilities.**

2.1. Re-design the network to meet growing needs for bandwidth.
The current network of T1/1.54 Mbps connections is not enough to support growing health care applications. After analysis, the most efficient strategy has been determined to be scalable Ethernet. Although a basic framework for network architecture has been developed, the exact topology for implementation will be finalized upon conclusion of the RFP process.

2.2. Pilot the migration from T1 to Ethernet architecture in a secure dedicated network by working with "early adopter" health care facilities.
The early adopters are those with the most immediate need for increased bandwidth to their facilities. These sites are ready to add or expand telehealth and health information technology applications. The "early adopters" are also the health care facilities with the ability to pay for the expanded broadband capacity.

While the Utah ARCHES Project will begin the migration from T1 to Ethernet architecture, T1s will remain a supported option for health care facilities for which a T1 is adequate.

2.3. Select and connect additional health care facilities.
There are many small rural and frontier health care facilities in Utah that anticipate their IT needs growing over the next five years and are interested in participating in the project. Without some assurance of affordability, however, these health care facilities are cautious about committing to implementation at the outset. Determination of which sites to add will be made in conjunction with these sites following analysis of costs based upon responses to the RFP.

3. Increase network reliability to support critical patient care applications.

3.1 Design the network with the goal of 99.999% reliability
Patients in rural Utah deserve the same network reliability as their urban counterparts. The Utah ARCHES project will build reliability by leveraging existing infrastructure and building new facilities at critical network points. Reliability will also improve when a second telecommunications path is built to southeast Utah.

The network redesign will allow alternate network traffic routing if a disruption occurs in one area. The Utah Telehealth Network will interconnect the network cores of its partner networks to assure that sites stay up when lines fail. For example, a partnership with the State of Utah's Department of Technology Services may provide a failover microwave

network. When lines get cut, the network path could rollover to the state's microwave network until service is restored.

4. Integrate Utah's health networks and resources into unified infrastructure.

4.1. Connect Utah's health care networks

The Utah Telehealth Network (UTN) is a network of networks comprised of UTN sites, Intermountain Healthcare which connects all of their facilities into an integrated network and the Utah Navajo Health system that connects their geographically dispersed clinics together. With the network re-design, these network entities will be connected at a network core and integrated to share healthcare and telemedicine services. Additional, currently unconnected health care facilities, such as local health department satellite offices and rural clinics, will be connected into the new state-wide network.

4.2. Connect other Utah network resources

Within the state of Utah, other "non-healthcare" networks provide an opportunity to use their excess bandwidth to connect geographically challenging areas within the state. The Utah Education Network is a coordinated, statewide, multi-option telecommunications system to assist in the delivery of educational services across the state. Additionally, the State of Utah has a microwave infrastructure throughout the state. We will explore the use of these other network resources to provide redundancy, back up, and/or primary network paths where commercial infrastructure is unavailable or unreliable.

4.3. Connect to surrounding state's and/or nationwide networks

The Utah ARCHES Project will provide connectivity to Internet2 and/or National Lambda Rail through the Utah Education Network to promote the "network of networks" architectural model to other interstate and intrastate telemedicine networks. Potentially, these interconnections will allow the opportunity for broader telemedicine connectivity into widely rural areas in surrounding states.

5. Maintain network efficiency through coordinated management among partners.

5.1. Develop network management and governance processes.

Develop agreed-upon best practice network management processes to govern the combined network infrastructures to ensure efficiency, security, and reliability in operations during the project and beyond.

5.2. Define network security boundaries.

The Utah Telehealth Network is a network of unrelated healthcare sites and networks. The Utah ARCHES project will build upon this base. It

will be imperative to respect network boundaries to allow all parties to retain some level of autonomy, maintain critical privacy of protected information, and secure their network environment. We will develop agreed upon best practice security procedures that will serve as partner boundaries along the network.

5.3. Build a virtual Network Operations Center (NOC) for network management and coordination.

A virtual Network Operations Center (NOC) will be utilized to support network monitoring and operations, information security, and incidence response. Protocols will be developed and implemented to monitor network health and vitality to the edge of each other's networks, as well as to coordinate each partner's response processes to network events. The development of the virtual NOC will promote proactive communication among the partners' technical staff.

One of the greatest challenges experienced by Utah Telehealth Network has been connecting telehealth applications through another network's security systems. Procedures will be developed and implemented to coordinate the sharing of approved patient information and telehealth services in a manner that is timely, efficient, HIPAA-secure, while protective of each other's networks.

Utah ARCHES: Correlating Project Goals and Technical Implementation Strategies

Purpose: to improve the quality of healthcare for the citizens of Utah by building upon the existing IT infrastructure and increasing broadband capacity in order to advance innovative E-health services

Project Goals

Technical Implementation Strategies

	Foster Collaboration Among Healthcare Networks	**Expand Telehealth and Telemedicine Services in Rural Utah**	**Facilitate the Adoption of HIT in Rural Utah**	**Increase Educational Opportunities for Healthcare Providers in their Communities**
Re-design the Existing IT Infrastructure to Create an Scalable and Unified Statewide Healthcare Network	By eliminating geographic barriers, providers can use the telemedicine network infrastructure to access and communicate with a statewide community of practitioners.	A more stable infrastructure with increased network capacity will increase access to specialty services, such as telestroke and teleburn..	A re-designed network infrastructure will provide the stability necessary for the adoption of electronic health records	The re-designed infrastructure will be able to accommodate an increasing number of tele-education sessions to provide practitioners with the necessary training.
Increase Broadband Capacity	Increased broadband will provide unified communications between rural and urban sites, through video conferencing, telecom services, voice conferencing, and other means of collaboration.	Use the increased broadband capacity to rapidly transfer digital radiological images.	Rural facilities will use the increased bandwidth to access electronic medical records which may be transferred between entities.	Use technology, such as compressed video, satellite, and internet delivery, to bring more opportunities to rural health care providers who do not otherwise have access to accelerated learning opportunities.
Increase Reliability to Support Critical Patient Care Applications	Reliable broadband transmission will increase the demand for teleconsultation activities.	A network which includes internal backup systems, alternate telecom links and a disaster plan will provide the dependability needed for reliable telemedicine services.	Introduce state-level reliability and security specifications necessary for the successful implementation of HIT.	
Integrate Utah's Health Networks and Resources into a Unified Infrastructure	The network redesign will provide robust interconnectivity among healthcare facilities, allowing a growing number of sites to participate in telehealth activities.	A solid infrastructure will allow healthcare providers to take advantage of teleconsultation services.		Use integration available through the telemedicine network to provide education from Utah's teaching facilities to providers to rural healthcare facilities.
Maintain network efficiency through coordinated management among partners	The multi-system management structure of the network brings Utah's healthcare systems, even those that compete in the marketplace, together.	UTN will create a Network Operations Center to ensure the seamless delivery of telemedicine services to all regions.	Members of the network who have implemented HIT solutions can provide guidance to those who are in the process of doing so.	.

Project Approach

Leadership and Management

The Utah Telehealth Network Advisory Board will provide oversight of the Utah ARCHES Project. The Advisory Board's Technical and Finance subcommittees will monitor progress and the budget throughout the project. The project management team will report monthly to the subcommittees and quarterly to the full Advisory Board.

The Project Management Team will be led by the University of Utah and Intermountain Healthcare and will include representatives from all key partners. The management team will meet monthly via videoconferencing, phone, and/or in person and utilize Microsoft SharePoint portal software for ongoing communications.

The Utah ARCHES Project Management Team co-managers will be:

- Deb LaMarche, Program Manager, Utah Telehealth Network
- Kyle Andersen, Director of Enterprise Communications, Intermountain Healthcare

The Utah ARCHES Project Management Team members will include:

- Jeff Shuckra, Network Engineer, Utah Telehealth Network
- Mike Raiford, Manager of Core Networks, Intermountain Healthcare
- Allen Anderson, Network Engineer, Utah Navajo Health System
- Mark Beekhuizen, Manager, Network Support, University of Utah Health Sciences Center
- Scott Horne, Data Analyst, Utah Hospital and Health Systems Association
- Vivian Garcia, Telemedicine Program Coordinator, Association for Utah Community Health
- Kathy Froerer, Executive Director, Utah Association of Local Health Officers
- Randy Fisher, Health IT Service Director, Utah Department of Technology Services
- Floyd Ritter, Strategic Network Planner, Utah Department of Technology Services
- Jamie Steck, Director of Information Technologies, Central Utah Clinic
- Barry Bryson, Associate Director, Utah Education Network
- Dennis Sampson, Grants Manager, Utah Education Network

The Management Team will be responsible for planning and implementation of the Utah ARCHES Project technical strategies. The team will initiate the Request for Proposals (RFP) process, evaluate submitted proposals and make recommendations to

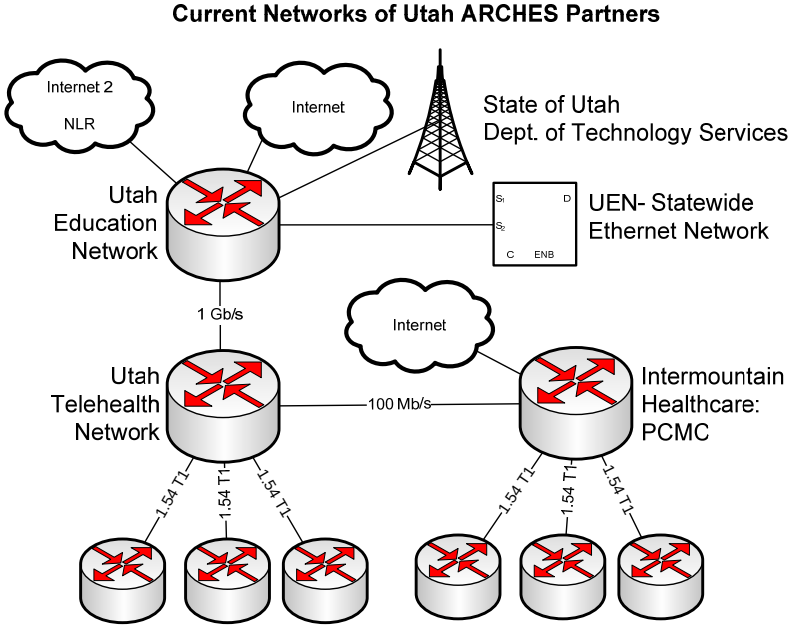
the Board. Once proposals have been selected, the team will negotiate contracts, approve final network architecture, and manage installation of telecommunications infrastructure. Finally, the team will coordinate network management among the partners to facilitate the delivery of telehealth applications while maintaining network security and efficiency.

Technical Design

Network Analysis

The partners of the Utah ARCHES project have a long history of working together, but as independent entities. The current core infrastructure is bound together by two key functions: 1) dedicated, private lines, and 2) business relationships.

Utah Education Network houses the Utah Telehealth Network's core equipment and serves as the Internet access point to the entire state. Intermountain Healthcare has its own independent internet access. UTN and Intermountain Healthcare: PCMC currently share a dedicated 100 Mbps link for data transmissions between their organizations. The State of Utah's Department of Technology Services uses the infrastructure of Utah Education Network for Internet access and data transport. Each has its own network operations center (NOC) that performs network monitoring, operations, and security. A new design would move the PCMC to Intermountain's hub and build completely new infrastructure between the partners.



Intermountain Healthcare Sites and UTN Members
(Numbers not to scale)

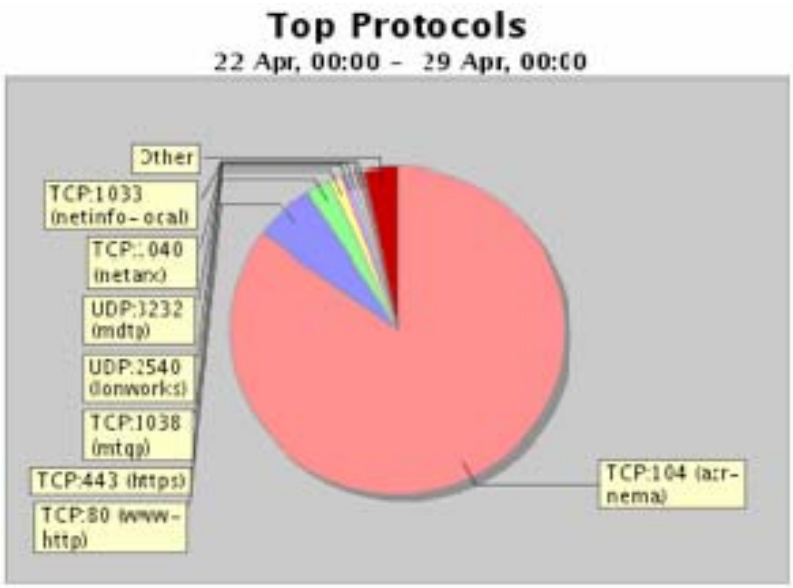
Current issues at the core include:

- Bandwidth at Full Capacity – The endpoints of the Utah Telehealth Network and Intermountain Healthcare have maximized their bandwidth. The goal is to have scalable, dedicated, private network between each endpoint to the Utah ARCHES core.
- Independent Operations – Each network has an excellent operations and security systems, which can create difficulties communicating between networks due to security issues. The goal is to create a managed process to unify the processes of the network partners into a single, statewide health network.

The table below lists the growth and bottlenecks facing medical applications. The Utah ARCHES project will employ expanded infrastructure to ensure seamless adoption of new applications.

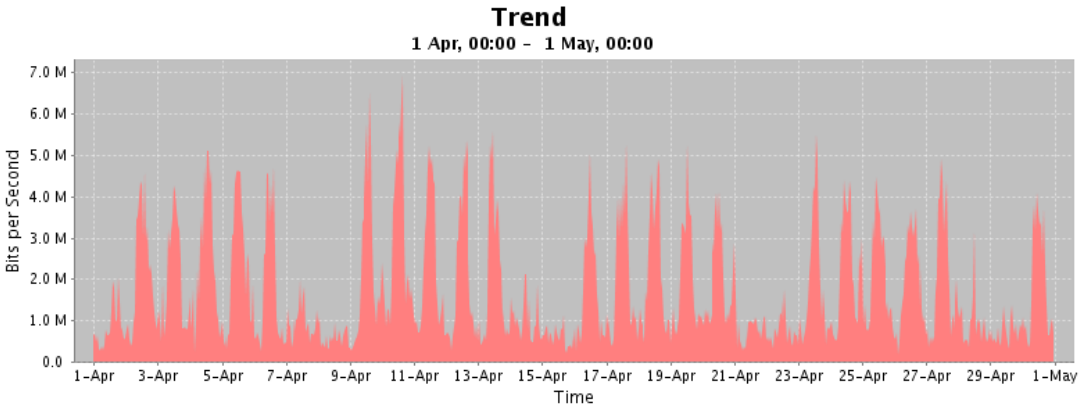
Telehealth Applications	*Required Bandwidth*	*Current Bandwidth*	*Current Situation*	*Desired Outcome*
Teleradiology	1000 Mbps	1.54 Mbps	15-20 minute transmission	3 minute transmission
Tele-consults using higher bandwidth videoconferencing	1-4 Mbps	.384 Mbps	Less than optimal quality of videoconferencing	Diagnosis quality videoconferencing
Web-streamed Medical Education to 200 participants	153.8 Mbps	135 Mbps	Not adequate for demand	200+ web streams
Off-site data, medical, and billing backups	100 Mbps	1.54 Mbps	Impractical for daily backups	Daily backups in under 60 minutes
To simultaneously run all applications at each endpoint	*5-7 Mbps*	*1.54 Mbps*	*Bottlenecked bandwidth at endpoints*	*Scalable network*

Increased bandwidth requirements for current networking services are also projected to increase. The current services requested are depicted in an analysis of 22-29 April 2007 usage:



- DICOM – Port 104: Teleradiology for off-hour support at rural facilities
- Electronic Medical Records - Ports 1038, 3232, 1033, and 3381: Stores patient health data
- WWW Web HTTP – Port 80: Medical education and web streaming
- HTTPS – Port 443: Secure access for off-site employees and third party vendors
- Remote Desktop Protocol (RDP): Remote controlling a PC

The trend toward more bandwidth utilization indicates that 1.54 Mbps T1 is inadequate for future medical applications. The current demand is 5-7 Mbps during an average workday as shown below.



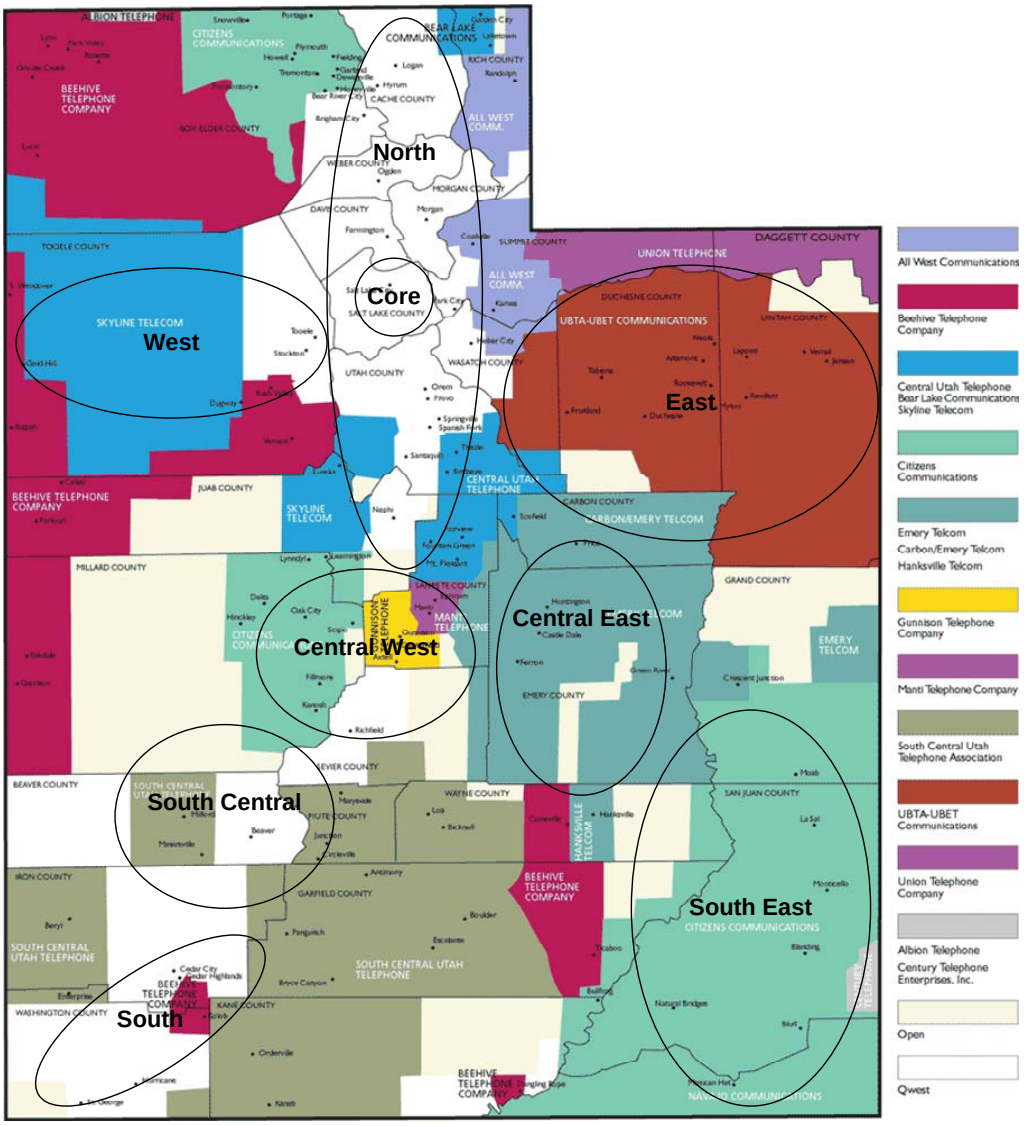
Beyond the network core, rural Utah faces significant challenges with the telecommunication providers. Like many rural areas in the United States,

telecommunications providers in rural Utah grew up independently and were built with only peripheral connections to their network neighbors. The following represent challenges for healthcare expansion.

1. Interoperability - Each provider has its own set of networking services and standards. The lack of uniformity increases network operation costs, especially to rural Utah.
2. Facilities – Network options are scarce in the rural providers. Providers may not have remaining capacity in their facilities or may not have Ethernet services. The goal is to use existing infrastructure where possible, but increase facilities when needed.
3. Reliability – Utah's tremendous rural geography makes 99.999% reliability over a year a significant challenge. Lighting strikes, power outages, and network bottlenecks pose consistent outages for the current infrastructure. A key strategy of the Utah ARCHES Project is to increase reliability by employing secondary networks where infrastructure is most vulnerable.

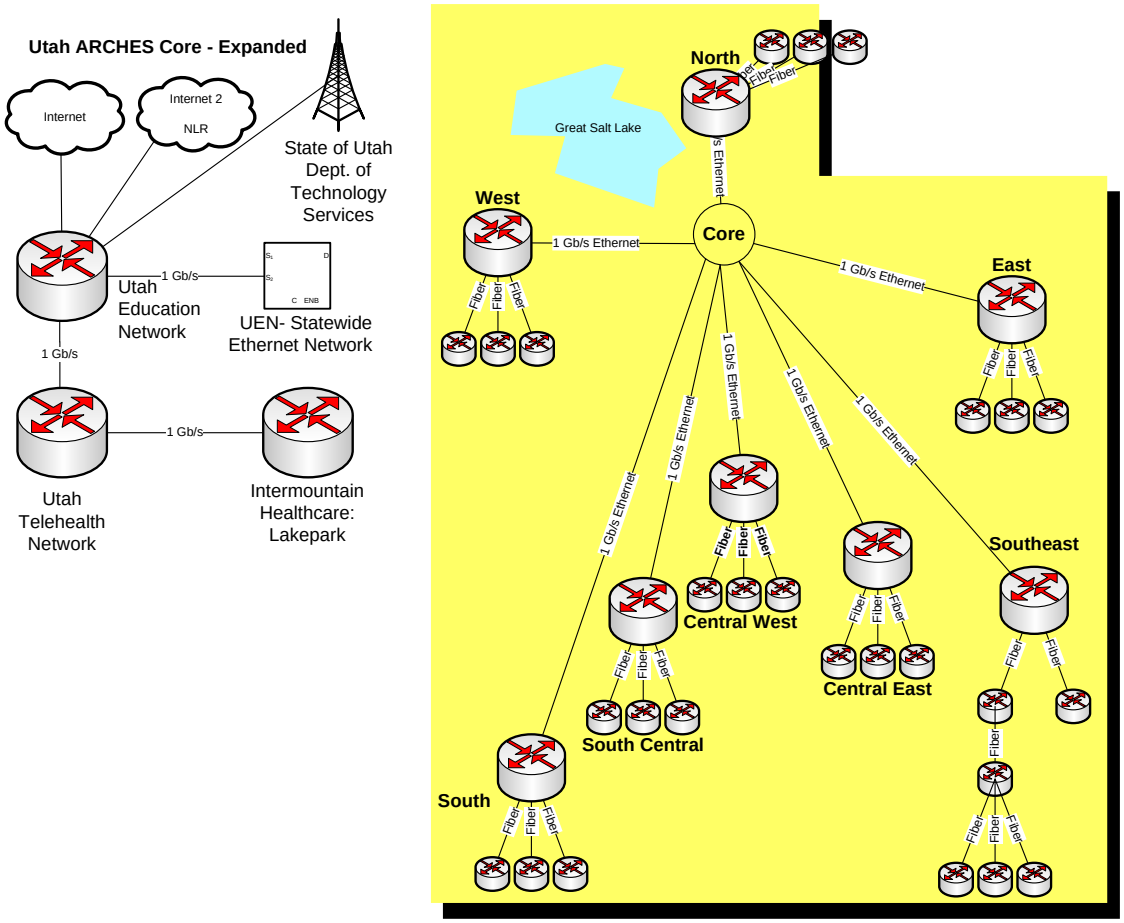
Cross referencing the endpoints of the Utah ARCHES project over a map of the telecommunication providers (see next page) begins to show clusters of service areas. Where necessary, creating regional aggregation points in the clusters will cut the cost of transportation to the network core. This grouped approach will save money and maintenance when compared to transporting each individual endpoint.

Utah Arches Endpoint-Clusters overlaid on Map of Telecommunication Providers



Network Architecture of the Utah ARCHES Project

The future network architecture will begin with the scalable "hub and spoke" model, but will allow flexibility to address regional issues. It will unify the interoperations of its core network, increase bandwidth for dedicated networks, create Regional Aggregation Points and standardize the networks to each endpoint.



Core

Network operations will be centralized at the core. Each partner has its own network and security teams. The core of the Utah ARCHES project will bind their highly successful operations through improved infrastructure and coordinated management. Each network hub will be connected to Utah Telehealth Network through a dedicated line. The partner networks will continue maintaining their own operations, but create a virtual network operations center to coordinate communications.

The virtual Network Operations Center (NOC) will oversee network operations and monitoring, coordinate information security and incident response. The key to the NOC's success will be communication between the partners. All configurations for network equipment will be managed from the NOC. Firewalls, anomaly detection, and intrusion detection will be centrally monitored from the NOC. Each partner will continue to employ front-door firewalls to protect them from unwanted network traffic. If a problem emerges, the partner would simply block traffic until the problem is resolved.

Regional Aggregation Points

A Regional Aggregation Point represents the point at which sites in a regional cluster will access the network. The Regional Aggregation Point will connect to the network core through a private, dedicated 1 Gb/s Ethernet connection. The use of regional aggregation points will produce significant cost savings by pooling transport charges for a region rather than from individual endpoint. Each RAP will be supported 24/7/365 and work toward the goal of 99.999% reliability. It is our intention that the individual Regional Aggregation Point will be located within and managed by local telecommunications companies. This design will be included as part of the competitive bidding process. In the absence of reasonable bids, we will explore the use of the Utah Education Network's Ethernet connectivity to connect into the Utah ARCHES core.

We will seek to improve network reliability through partnerships with other state network resources such as the state of Utah's microwave system. In the event of a network outage between the Regional Aggregation Point and the core, the microwave system of the core could serve as an emergency carrier. The Regional Aggregation Points will be configured to instantly rollover for the sake of continuous patient care.

In rural areas, there may be multiple aggregation points within the same region. The geographic size of Utah's rural spaces requires multiple small networks that unite into a larger regional network. Each network may range in bandwidth 10 Mb-1 Gb depending on availability and need. For example, a radio option may be more efficient to reach endpoints on the Navajo reservation. The next hop from the radio tower toward the network core might be a fiber network. The hops might continue until reaching the regional aggregation point.

In metropolitan areas, a regional aggregation point may prove unnecessary. Certain circuits avoid the need for aggregation by riding the carrier's backbone directly to the Utah ARCHES core.

Endpoint Sites

The endpoints are the individual health care facilities. They will connect to the regional aggregation point through finished service fiber. Management responsibility for the individual circuits will be the responsibility of the telecommunications providers.

The cost of fiber to each facility represents a significant financial outlay. Fiber to the facility means offers scalable bandwidth and one-time installation. Ethernet over copper is often an option, but is generally not being considered for this project, as it has limited bandwidth potential.

Scalable Networks

The networks will be scalable in bandwidth and in number and size of endpoints.

- Core – This proposal will increase the capacity of the current core's infrastructure. Dedicated, private lines with run 1 Gb Ethernet between each

core partner. It will directly connect Intermountain Healthcare's hub to UTN's with new infrastructure. All connections will be upgraded to 1 Gb.

- Core to regional aggregation points – Dedicated, private 1 Gb Ethernet connectivity will be established. If necessary, Utah ARCHES will explore use of UEN's statewide Ethernet system when there are no competitive options. All endpoints within the regional aggregation point will share the line back to the core.
- Regional Aggregation Point to Endpoints - The network to the endpoints is scalable in three ways:
  1. Bandwidth - The total bandwidth ranges from 10 Mb/s to 1 Gb/s. Sustainability demands the endpoint select its own appropriate business cost.
  2. Capacity – The number of endpoints and networks will fluctuate depending upon the demands of the partners.
  3. Diversity – A unified state network is as homogenous as possible, but will incorporate multiple types of networks in order to reach the endpoints.

Each region of the network faces its own set of technical challenges that are difficult, but not impossible. The potential solutions include a variety of regional approaches. The following table provides a brief synopsis.

Technical Issues Facing Regional Aggregation Points and Construction Plan

Regional Aggregation Points	Challenges	Proposed Solutions	Regional Sites or Networks
Core	1. Communication 2. Network Monitoring 3. Security	Build a virtual NOC through direct networks, phones, and managed coordination	4 Networks
North	Network diversity is readily available in these metropolitan areas.	A regional aggregation point may not be necessary in these regions. Ethernet will terminate directly at the network partner's core.	80 Sites
South	Network diversity is readily available in these metropolitan areas.	A regional aggregation point may not be necessary in these regions. Ethernet will terminate directly at the network partner's core.	80 Sites
East	1. Lack of bandwidth 2. Lack of competition 3. Bottleneck for network	Utah ARCHES will use the competitive bid process to create an Ethernet to the regional aggregation point.	12 Sites
West	1. Current network options is only 10 Mb/s LSS 2. Bottleneck for network	Network options are already growing in the region. Utah ARCHES will explore taking advantage of the advancing technologies.	3 Sites
Southeast	1. Rural population and low ROI for telecommunication providers 2. Lack of facilities 3. Lack of competition 4. Bottleneck for network takes down six endpoints over a 307 mile stretch	It is likely that there will be multiple aggregation points networked together before reaching the regional. Utah ARCHES will work through competitive bid process to construct new facilities and expand network redundancy.	11 Sites 2 Networks
Central East	1. Lack of facilities 2. Lack of competition 3. Network bottleneck that is particularly subject to outages	An outage at this point disables multiple endpoints. It is the greatest threat to reliability. Utah ARCHES will require special attention be paid to backup channels during the competitive bid process.	7 Sites
Central West	1. Current network options is only 1.54 Mbps T1 2. Lack of facilities	The infrastructure is advancing. Utah ARCHES hopes that it will be enhanced through competitive bids.	18 Sites
South Central	1. Lack of facilities	Work through competitive bid process to construct new facilities and expand network redundancy.	11 Sites
Miscellaneous	1. Lack of facilities	A number of endpoints are outside of the territories of any network provider. Utah ARCHES will use the competitive bid process to promote new networks.	5 Sites

Work Plan and Timeline

The Work Plan on the next three pages details the steps that will be taken during the two years of the project. It is followed by a Timeline that highlights the project milestones. In general, the project will follow the following broad outline:

Year 1

Conduct a competitive bidding process
Install core network and backbone infrastructure
Install “early adopter” health care facilities

Year 2

Based upon the results of the competitive bidding process that will finalize network design and pricing, connect additional sites to the network

ID	Task Name	Start	Finish	Duration	Resource Names
1	**PROJECT KICKOFF**	**Fri 6/22/07**	**Fri 8/3/07**	**31 days**	
2	File 465's	Fri 6/22/07	Tue 7/31/07	28 days	
3	**Convene management team**	**Wed 8/1/07**	**Fri 8/3/07**	**3 days**	**Network Architect,Ne**
4	Set monthly meeting plan	Wed 8/1/07	Wed 8/1/07	1 day	
5	Review project scope & site list	Wed 8/1/07	Wed 8/1/07	1 day	
6	Review project goals	Wed 8/1/07	Wed 8/1/07	1 day	
7	Review project plans	Wed 8/1/07	Wed 8/1/07	1 day	
8	Review existing network	Wed 8/1/07	Wed 8/1/07	1 day	
9	Assign policies and procedures committee	Thu 8/2/07	Thu 8/2/07	1 day	
10	Form Information Security Council between partners	Fri 8/3/07	Fri 8/3/07	1 day	
11	**PROJECT INITIATION**	**Mon 8/6/07**	**Thu 5/15/08**	**204 days?**	
12	**Conduct RFP process**	**Mon 8/6/07**	**Mon 12/10/07**	**91 days**	
13	Write RFP's	Mon 8/6/07	Thu 9/6/07	24 days	
14	Issue RFP's	Fri 9/7/07	Thu 10/25/07	35 days	
15	Evaluate RFP's	Fri 10/26/07	Thu 12/6/07	30 days	
16	Select RFP's	Fri 12/7/07	Fri 12/7/07	1 day	
17	Finalize network strategy	Mon 12/10/07	Mon 12/10/07	1 day	
18	Set project phases	Mon 12/10/07	Mon 12/10/07	1 day	
19	**Contracts with Awardees**	**Tue 12/11/07**	**Thu 5/15/08**	**113 days?**	
20	**Negotiate contracts for networks, construction, & equipment**	**Tue 12/11/07**	**Mon 4/14/08**	**90 days**	
21	Core networks	Tue 12/11/07	Fri 2/15/08	49 days	
22	Regional Aggregation Points & Backbones	Tue 12/11/07	Mon 4/14/08	90 days	
23	Early Adopter Endpoints	Tue 12/11/07	Mon 4/14/08	90 days	
24	Order network & equipment	Tue 1/15/08	Thu 5/15/08	88 days?	
25	**NETWORK DESIGN & SETUP**	**Mon 8/6/07**	**Tue 6/23/09**	**492 days?**	
26	**Utah ARCHES core**	**Mon 8/6/07**	**Thu 5/22/08**	**209 days**	
27	**Outline NOC operations**	**Mon 8/6/07**	**Thu 10/4/07**	**44 days**	
28	Write operational policies & procedures	Mon 8/6/07	Wed 9/5/07	23 days	
29	Coordinate network operations & communications	Thu 9/6/07	Fri 9/7/07	2 days	
30	Coordinate security between partners	Thu 9/6/07	Fri 9/7/07	2 days	
31	Implement operational procedures for current networks	Thu 9/6/07	Thu 10/4/07	21 days	
32	**Core network construction & installation**	**Mon 2/18/08**	**Thu 5/22/08**	**69 days**	

Project: Utah Rural Health Network
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ID	Task Name	Start	Finish	Duration	Resource Names
33	**Network construction between IHC Lakepark to UTN**	**Mon 2/18/08**	**Fri 5/9/08**	**60 days**	
34	Construct IHC/Lakepark hub to UTN hub	Mon 2/18/08	Fri 5/9/08	60 days	
35	Install 1 Gb network equipment at UTN	Fri 5/9/08	Fri 5/9/08	1 day	
36	**Network construction between UTN to Eccles Broadcast (EBC) core**	**Mon 5/12/08**	**Thu 5/22/08**	**9 days**	
37	Connect UTN hub to Eccles Broadcast (EBC) core	Mon 5/12/08	Wed 5/14/08	3 days	
38	Connect UTN hub to UEN Nortel Optera GeoMax	Mon 5/12/08	Wed 5/14/08	3 days	
39	Connect UTN hub to State Microwave through EBC core	Thu 5/15/08	Mon 5/19/08	3 days	
40	Reconfigure EBC core to I2 and NLR for Utah ARCHES partners	Tue 5/20/08	Thu 5/22/08	3 days	
41	**Regional Implementations**	**Mon 2/18/08**	**Tue 6/23/09**	**352 days?**	
42	**Region 1 - North**	**Mon 2/18/08**	**Wed 4/22/09**	**308 days?**	
43	**Phase 1**	**Mon 2/18/08**	**Thu 8/14/08**	**129 days?**	
44	Install facilities at regional aggregation point	Mon 2/18/08	Fri 8/1/08	120 days	
45	Create regional backbone	Mon 2/18/08	Fri 8/1/08	120 days	
46	Connect Utah ARCHES Core to backbone of Ethernet provider	Thu 5/15/08	Fri 5/23/08	7 days	
47	Create backup or loop for network redundancy	Mon 5/26/08	Tue 6/3/08	7 days	
48	**Early adopter endpoints**	**Mon 2/18/08**	**Thu 8/14/08**	**129 days?**	
49	Review needs analysis for each site	Mon 2/18/08	Fri 3/28/08	30 days	
50	Construction & Installation	Mon 2/18/08	Fri 8/1/08	120 days	
51	Test & Turn Up Networks	Mon 8/4/08	Tue 8/12/08	7 days	
52	Site implementation completion	Wed 8/13/08	Wed 8/13/08	1 day?	
53	Review installations to improve endpoint installations	Thu 8/14/08	Thu 8/14/08	1 day?	
54	**Phase 2**	**Fri 8/15/08**	**Wed 4/22/09**	**179 days?**	
55	**Additional sites**	**Fri 8/15/08**	**Wed 4/22/09**	**179 days?**	
56	Review needs analysis for each site	Fri 8/15/08	Thu 9/25/08	30 days	
57	Order networks & equipment as aggregation points come online	Fri 9/26/08	Fri 10/24/08	21 days	
58	Construction & Installations	Mon 10/27/08	Fri 4/10/09	120 days	
59	Test & Turn Up Segments	Mon 4/13/09	Tue 4/21/09	7 days	
60	Site goes online	Wed 4/22/09	Wed 4/22/09	1 day?	
61	**Region 2 - South**	**Mon 2/18/08**	**Wed 4/22/09**	**308 days?**	
80	**Region 3 - East**	**Mon 2/18/08**	**Tue 6/23/09**	**352 days?**	
99	**Region 4 - West**	**Mon 2/18/08**	**Wed 3/11/09**	**278 days?**	
118	**Region 5 - Southeast**	**Mon 2/18/08**	**Fri 6/19/09**	**350 days?**	

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ID	Task Name	Start	Finish	Duration	Resource Names
137	**Region 6 - South Central**	**Mon 2/18/08**	**Fri 4/24/09**	**310 days?**	
156	**Region 7 - Central East**	**Mon 2/18/08**	**Fri 4/24/09**	**310 days?**	
175	**Region 8 - Central West**	**Mon 2/18/08**	**Fri 4/24/09**	**310 days?**	
194	**PROJECT CLOSEOUT**	**Wed 6/3/09**	**Tue 6/30/09**	**20 days?**	
195	Evaluation	Wed 6/3/09	Mon 6/22/09	14 days?	
196	Final Report	Tue 6/23/09	Tue 6/30/09	6 days	

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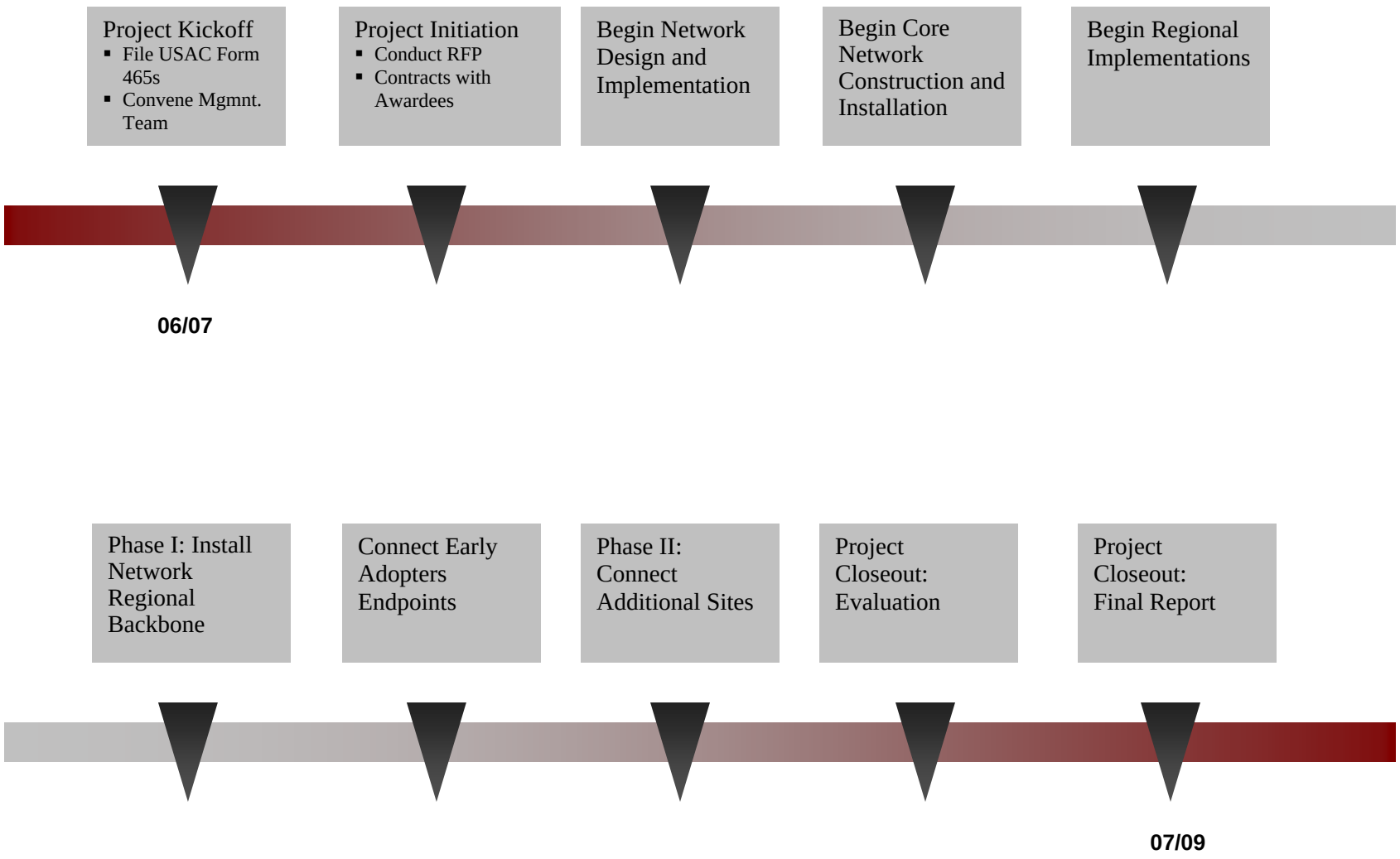
The Utah ARCHES Project: PROJECT TIMELINE

Advancing Rural Connections for Healthcare and E-health Services

Illustration of starting points of major project milestones



List of Healthcare Facilities

On the next four pages is a complete list of healthcare facilities that are participating in the Utah ARCHES Project. There are a total of 134 sites participating in the project.

Year 1 Facilities

Health care facilities on this list are considered the "early adopter" sites and are the priority for the project. They have a demonstrated both a need and a willingness to commit to covering on-going costs.

Year 2 Facilities

Health care facilities on this list have committed to the planning process but will wait until after the competitive bidding process has been completed to decide whether or not to move forward with implementation. Without on-going support through USAC, these sites must be sure that on-going costs are within their means prior to committing. We are estimating that 50% of the sites will end up connecting during the pilot project.

For-Profit Facilities

The Central Utah Clinic is a for-profit health care provider with clinics in both urban and rural areas. We understand that they are NOT eligible for funding. They have been included as specific examples to explore the feasibility of including for-profits into the network at a price that is cost-effective for them and ensures that they pay their fair share.

A Note on Urban Sites

The Utah ARCHES proposal consists of a majority of rural sites, but does include urban sites as well. The urban sites are from three geographic areas:

- The Wasatch Front includes Salt Lake City and the four urban counties that house the majority of the population of Utah as well as the state's health care resources. Urban sites from this area have been included because they provide services and resources to rural sites, or are part of an organization that includes rural sites to which they need to link.
- Logan, Utah, is an urban city in a rural county along the state's northern border with Idaho. Its health care facilities provide health care services and resources to the surrounding communities including Smithfield, but also because they themselves need access to the health care services and resources located in Salt Lake City 81 miles away.

- St. George is in a similar situation, an urban city in a rural county, in this case, along the state's southern border. Health care providers in St. George are resources for many southern Utah rural health care facilities, but also need access to Salt Lake City health care providers 303 miles away.

YEAR 1 Health Care Facilities: Early Adopter sites

SITE NAME	ADDRESS	CITY	ZIP CODE	STATE	RUCA	TELEPHONE
ALLEN MEMORIAL HOSPITAL	719 WEST 400 NORTH	MOAB	84532	UT	7	435-259-7191
AMERICAN FORK HOSPITAL	170 NORTH 1100 EAST	AMERICAN FORK	84003	UT	1	801-357-3971
BEAVER VALLEY HOSPITAL	85 NORTH 400 EAST	BEAVER	84713	UT	10	435-438-7101
BLANDING FAMILY PRACTICE	799 SOUTH 200 WEST	BLANDING	84511	UT	7	435-678-3601
BLUE MOUNTAIN HOSPITAL	850 SOUTH 100 WEST	BLANDING	84511	UT	7	OPEN 03/08
BRIGHAM CITY CLINIC	980 SOUTH MEDICAL DRIVE #1	BRIGHAM CITY	84305	UT	4	435-279-8617
CANYON VIEW FAMILY PRACTICE	15 EAST 400 NORTH	PAROWAN	84761	UT	10	435-477-3317
CEDAR CITY GENERAL SURGERY	166 WEST 1325 NORTH #350	CEDAR CITY	84720	UT	4	435-586-8192
CEDAR CITY INSTACARE	962 SOUTH SAGE DRIVE	CEDAR CITY	84720	UT	4	435-865-3440
CENTRAL VALLEY MEDICAL CENTER	48 WEST 1500 NORTH	NEPHI	84648	UT	3	435-623-3000
COTTONWOOD HOSPITAL	5770 SOUTH 300 EAST	MURRAY	84107	UT	1	801-314-5300
DIXIE REGIONAL (DX)	1380 E MEDICAL CENTER DR	SAINT GEORGE	84790	UT	1	435-688-4000
DIXIE REGIONAL MEDICAL CENTER	544 SOUTH 400 EAST	SAINT GEORGE	84770	UT	1	435-634-4000
GUNNISON VALLEY HOSPITAL	64 EAST 100 NORTH	GUNNISON	84634	UT	7	435-528-7246
HEBER VALLEY MEDICAL CENTER	1485 SOUTH HIGHWAY 40	HEBER CITY	84032	UT	7	435-654-2500
HURRICANE HEALTH CENTER	90 SOUTH 700 WEST	HURRICANE	84737	UT	7	435-635-7227
INTERMOUNTAIN MEDICAL CENTER	5300 SOUTH STATE DTREET	MURRAY	84107	UT	1	801-442-5000
LAKE PARK	4646 W. LAKE PARK BLVD.	WEST VALLEY	84120	UT	1	801-442-5000
LDS HOSPITAL	8TH AVENUE & C STREET	SALT LAKE CITY	84143	UT	1	801-408-1100
LOGAN INSTACARE	235 EAST 400 NORTH	LOGAN	84341	UT	1	435-752-1010
LOGAN REGIONAL HOSPITAL	1400 NORTH 500 EAST	LOGAN	84321	UT	1	435-716-1000
MCKAY-DEE HOSPITAL	3939 HARRISON BLVD	OGDEN	84403	UT	1	435-716-1000
MILFORD VALLEY HEALTH CARE	451 NORTH MAIN STREET	MILFORD	84751	UT	10	435-387-2411
MONTEZUMA CREEK CLINIC	262 EAST HIGHWAY 162	MONTEZUMA CREEK	84534	UT	8	435-651-3291
MONUMENT VALLEY HEALTH CARE CENTER	4 ROCKDOOR CANYON ROAD	MONUMENT VALLEY	84536	UT	10	435-727-3242
NAVAJO MOUNTAIN CLINIC	2 RAINBOW ROAD	NAVAJO MOUNTAIN	84044	UT	10	435-651-3719
ORTHO SPECIALTY - SAMUELSON	301 NORTH 200 EAST #2A	SAINT GEORGE	84770	UT	1	435-673-2600
PRIMARY CHILDREN'S MEDICAL CENTER	100 NORTH MEDICAL DRIVE	SALT LAKE CITY	84113	UT	1	801-588-2304
RICHFIELD FAMILY PRACTICE	460 NORTH MAIN	RICHFIELD	84701	UT	7	435-896-5496
SAN JUAN HOSPITAL	364 WEST 300 NORTH	MONTICELLO	84535	UT	10	435-587-2116
SARATOGA SPRINGS FAMILY PRACTICE	250 EAST STATE ROAD 73	SARATOGA SPRINGS	84045	UT	1	801-766-4567
SEVIER VALLEY HEALTH CENTER	70 EAST 1100 NORTH	RICHFIELD	84701	UT	7	435-896-8254
SEVIER VALLEY HOSPITAL	1100 NORTH MAIN STREET	RICHFIELD	84701	UT	7	435-896-8271

SMITHFIELD FAMILY PRACTICE	291 SOUTH MAIN #D	SMITHFIELD	84335	UT	1	435-563-3940
SOUTH CACHE VALLEY	1652 SOUTH HWY 165	LOGAN	84321	UT	1	435-752-6105
ST. GEORGE PSYCHIATRY	515 SOUTH 300 EAST #109	SAINT GEORGE	84770	UT	1	435-688-5588
ST. GEORGE WORKMED	385 NORTH 3050 EAST	SAINT GEORGE	84790	UT	1	435-251-2630
SUMMIT HEALTH CENTER	502 SOUTH MAIN	SMITHFIELD	84335	UT	1	435-563-3222
UINTAH BASIN MEDICAL CENTER	250 WEST 300 NORTH	ROOSEVELT	84066	UT	7	435-722-6163
UINTAH BASIN MEDICAL CTR - BASIN CLINIC	379 NORTH 500 WEST	VERNAL	84078	UT	10	435-789-1165
UNIVERSITY OF UTAH MEDICAL CENTER	50 NORTH MEDICAL DRIVE	SALT LAKE CITY	84112	UT	1	801-581-2121
UTAH VALLEY REGIONAL MEDICAL CENTER	1034 NORTH 500 WEST	PROVO	84604	UT	1	801-357-7850
VALLEY VIEW MEDICAL CENTER	1303 NORTH MAIN STREET	CEDAR CITY	84720	UT	4	435-586-6587

YEAR 2 Health Care Facilities: Planning sites; approximately 50% will connect in year 2.

SITE NAME	ADDRESS	CITY	ZIP CODE	STATE	RUCA	TELEPHONE
ALTA VIEW HOSPITAL	9660 SOUTH 1300 EAST	SANDY	84094	UT	1	801-501-2600
ALTAMONT MEDICAL CLINIC	15548 WEST 4000 NORTH	ALTAMOUNT	84001	UT	10	435-454-3173
ASSOCIATION OF UTAH COMMUNITY HEALTH	860 EAST 4500 SOUTH	SALT LAKE CITY	84107	UT	1	801-974-5522
BEAR LAKE COMMUNITY HEALTH CENTER	323 WEST LOGAN HIGHWAY	GARDEN CITY	84028	UT	10	801- 974-5522
BEAR RIVER HEALTH DEPARTMENT	655 EAST 1300 NORTH	LOGAN	84341	UT	1	435-792-6489
BEAR RIVER HEALTH DEPARTMENT	125 SOUTH 100 WEST	TREMONTON	84337	UT	7	435-257-3318
BEAR RIVER HEALTH DEPARTMENT	PO BOX 57	PARK VALLEY	84329	UT	10	435-793-2445
BEAR RIVER HEALTH DEPARTMENT	PO BOX 392	RANDOLPH	84064	UT	10	435-793-2445
BEAR RIVER VALLEY HOSPITAL	440 WEST 600 NORTH	TREMONTON	84337	UT	7	435-257-7441
BLANDING MEDICAL CENTER - SJH	930 NORTH 400 WEST	BLANDING	84511	UT	7	435-678-3434
BRIAN HEAD CLINIC	HIGHWAY 143	BRIAN HEAD	84719	UT	10	435-677-2700
BRYCE VALLEY CLINIC	25 SOUTH REDROCK DRIVE	CANNONVILLE	84718	UT	10	435-679-8545
CARBON MEDICAL SERVICES ASSN. INC.	305 CENTER STREET	EAST CARBON	84520	UT	5	435-888-4411
CASSIA REGIONAL (CA)	1501 HILAND AVENUE	BURLEY	83318	ID	4	208-677-6530
CASTLEVIEW DIALYSIS CENTER	230 NORTH	PRICE	84501	UT	4	435-637-8696
CENTRAL UTAH PUBLIC HEALTH DEPARTMENT	160 NORTH MAIN	NEPHI	84648	UT	3	435-462-2449
CENTRAL UTAH PUBLIC HEALTH DEPARTMENT	40 WEST 200 NORTH	MANTI	84642	UT	7	435-462-2449
CENTRAL UTAH PUBLIC HEALTH DEPARTMENT	70 WESTVIEW DRIVE	RICHFIELD	84701	UT	7	435-896-5451
CENTRAL UTAH PUBLIC HEALTH DEPARTMENT	428 EAST TOPAZ BOULEVARD	DELTA	84624	UT	7	435- 864-3612
CENTRAL UTAH PUBLIC HEALTH DEPARTMENT	550 NORTH MAIN STREET	JUNCTION	84740	UT	10	435-577-2521
CENTRAL UTAH PUBLIC HEALTH DEPARTMENT	18 SOUTH MAIN	LOA	84747	UT	10	435-836-1317

CENTRAL UTAH PUBLIC HEALTH DEPARTMENT	20 SOUTH 100 WEST	MOUNT PLEASANT	84647	UT	10	435-462-2449
CENTRAL UTAH PUBLIC HEALTH DEPARTMENT	55 SOUTH 400 WEST	FILLMORE	84631	UT	10	435-743-5723
CIRCLEVILLE CLINIC	145 WEST MAIN	CIRCLEVILLE	84723	UT	10	435-577-2958
COPPERVIEW COMMUNITY HEALTH CENTER	8446 SO. HARRISON STREET	MIDVALE	84047	UT	1	801-566-5494
DAVIS COUNTY HEALTH DEPARTMENT	50 EAST STATE STREET	FARMINGTON	84025	UT	1	801-451-3340
DAVIS COUNTY HEALTH DEPARTMENT	596 WEST 750 SOUTH	WOODS CROSS	84010	UT	1	801-451-3315
DELTA COMMUNITY MEDICAL CENTER	128 SO.H WHITE SAGE AVENUE	DELTA	84624	UT	7	435-864-5591
DIXIE DIALYSIS CENTER	720 SOUTH RIVER ROAD	SAINT GEORGE	84790	UT	1	435-656-0857
DUCHESNE VALLEY MEDICAL CLINIC - UBMC	50 EAST 200 SOUTH	DUCHESNE	84021	UT	10	435-738-2426
EMERY MEDICAL CENTER	90 WEST MAIN STREET	CASTLE DALE	84513	UT	10	435-381-2305
ENTERPRISE VALLEY MEDICAL CLINIC	223 SOUTH 200 EAST	ENTERPRISE	84725	UT	2	435-878-2281
EPHRAIM HEALTH CENTER	525 NORTH MAIN	EPHRAIM	84627	UT	7	435-283-4076
FILLMORE COMMUNITY MEDICAL CENTER	674 SOUTH HIGHWAY 99	FILLMORE	84631	UT	10	435-743-5591
FLAMING GORGE HEALTH CENTER		MANILA	84046	UT	10	435-781-0875
FOUNTAIN GREEN MEDICAL CLINIC	280 WEST 300 SOUTH	FOUNTAIN GREEN	84632	UT	10	435-445-3301
GARFIELD MEMORIAL HOSPITAL	200 NORTH 400 EAST	PANGUITCH	84759	UT	10	435-676-8811
GREEN RIVER MEDICAL CENTER	305 WEST MAIN	GREEN RIVER	84525	UT	10	435-564-3434
HELPER CLINIC (CARBON)	125 SOUTH MAIN	HELPER	84526	UT	4	435-472-7000
INTERMOUNTAIN HEALTH CARE - PARK CITY	LOWELL AVE	PARK CITY	84068	UT	7	435-472-7000
IRON MISSION DIALYSIS CENTER	1277 NORTHFIELD ROAD	CEDAR CITY	84720	UT	4	435-867-8175
KANE COUNTY HOSPITAL	355 NORTH MAIN	KANAB	84741	UT	10	435-644-5811
LIFEFLIGHT	250 N 2370 W	SALT LAKE CITY	84116	UT	10	801-321-1234
MANTI FAMILY PRACTICE	159 NORTH MAIN	MANTI	84642	UT	7	435-835-3344
MIDTOWN COMMUNITY HEALTH CENTER	670 28TH STREET	OGDEN	84403	UT	1	801-393-5355
MOUNTAINLANDS COMMUNITY HEALTH CTR	100 NORTH 215 WEST	PROVO	84601	UT	1	801-429-2020
ORDERVILLE CLINIC	425 EAST STATE STREET	ORDERVILLE	84758	UT	7	435-648-2108
PAROWAN MEDICAL CLINIC	450 EAST CLINIC WAY	PAROWAN	84761	UT	10	435-477-3344
PAYSON FAMILY HEALTH CTR (MTNLANDS)	910 EAST 100 NORTH SUITE 155	PAYSON	84651	UT	2	801-465-1890
REDSTONE HEALTH CENTER	1743 W. REDSTONE CENTER DR	PARK CITY	84098	UT	7	435- 658-9200
SALINA FAMILY PRACTICE	310 WEST MAIN	SALINA	84654	UT	10	435-529-7411
SALT LAKE VALLEY HEALTH DEPARTMENT	788 EAST WOODOAK LANE	MURRAY	84107	UT	1	801-313-6600
SALT LAKE VALLEY HEALTH DEPARTMENT	2001 SOUTH STATE STREET	SALT LAKE CITY	84190	UT	1	801-468-2750
SANPETE VALLEY HOSPITAL	1100 SOUTH MEDICAL DRIVE	MOUNT PLEASANT	84647	UT	10	435-462-4100
SHRINERS HOSPITAL	FAIRFAX RD AT VIRGINIA ST	SALT LAKE CITY	84103	UT	1	801-536-3600
SOUTH DAVIS COMMUNITY HOSPITAL	401 SOUTH 400 EAST	BOUNTIFUL	84010	UT	1	801- 295-2361
SOUTHEASTERN UTAH HEALTH DEPARTMENT	28 SOUTH 100 EAST	PRICE	84501	UT	4	435-637-3671
SOUTHEASTERN UTAH HEALTH DEPARTMENT	196 E CENTER	BLANDING	84511	UT	7	435-678-2723

SOUTHEASTERN UTAH HEALTH DEPARTMENT	471 SOUTH MAIN SUITE 4	MOAB	84532	UT	7	435-259-5602
SOUTHEASTERN UTAH HEALTH DEPARTMENT	25 WEST MAIN	CASTLE DALE	84513	UT	10	435-381-2252
SOUTHEASTERN UTAH HEALTH DEPARTMENT	117 SOUTH MAIN	MONTICELLO	84535	UT	10	435-587-2021
SOUTHWEST UTAH COMMUNITY HEALTH CTR	168 NORTH 100 EAST	SAINT GEORGE	84770	UT	1	435-986-2565
SOUTHWEST UTAH PUBLIC HEALTH DEPT	168 NORTH 100 EAST	SAINT GEORGE	84770	UT	1	435-673-3528
SOUTHWEST UTAH PUBLIC HEALTH DEPT	260 E D L SARGENT	CEDAR CITY	84720	UT	4	435-586-1583
SOUTHWEST UTAH PUBLIC HEALTH DEPT	75 WEST 1175 NORTH	BEAVER	84713	UT	10	435-438-2108
SOUTHWEST UTAH PUBLIC HEALTH DEPT	609 NORTH MAIN	PANGUITCH	84759	UT	10	435-676-8176
SOUTHWEST UTAH PUBLIC HEALTH DEPT	245 SOUTH 200 EAST	KANAB	84741	UT	10	435-644-2537
SPRINGVILLE HEALTH CENTER	762 WEST 400 SOUTH	SPRINGVILLE	84663	UT	1	801-429-1200
STANSBURY MEDICAL CENTER	220 MILLPOND ROAD	STANSBURY PARK	84074	UT	2	801-882 7711
SUMMIT COUNTY PUBLIC HEALTH DEPT	6505 NO. LANDMARK DRIVE	PARK CITY	84098	UT	7	435-615-3910
SUMMIT COUNTY PUBLIC HEALTH DEPT	85 NORTH 50 EAST	COALVILLE	84017	UT	10	435-336-3234
SUMMIT COUNTY PUBLIC HEALTH DEPT	110 NORTH MAIN	KAMAS	84036	UT	10	435-783-4351
TABIONA MEDICAL CLINIC	MAIN ST.	TABIONA	84072	UT	10	435-848-5509
TOOELE COUNTY HEALTH DEPARTMENT	151 NORTH MAIN STREET	TOOELE	84074	UT	4	435-843-2300
TOOELE COUNTY HEALTH DEPARTMENT	100 SOUTH 9TH STREET	WENDOVER	84043	UT	7	435-665-7004
TRICOUNTY HEALTH DEPARTMENT	281 EAST 200 NORTH	ROOSEVELT	84078	UT	7	435-722-6300
TRICOUNTY HEALTH DEPARTMENT	BLDG 13A CIRCLE DRIVE	FORT DUCHESNE	84026	UT	10	435-724-0351
TRICOUNTY HEALTH DEPARTMENT	147 EAST MAIN STREET	VERNAL	84078	UT	10	435-781-5475
TRICOUNTY HEALTH DEPARTMENT - CLINIC		MANILA	84046	UT	10	435-781-0875
UTAH COUNTY HEALTH DEPARTMENT	151 SO. UNIVERSITY AVENUE	PROVO	84601	UT	1	801-370-8700
UTAH DEPARTMENT OF HEALTH	288 NORTH 1460 SOUTH	SALT LAKE CITY	84114	UT	1	801-538-6901
UTAH DEPARTMENT OF HEALTH - CSHCN	44 MEDICAL DRIVE	SALT LAKE CITY	84114	UT	1	801-584-8498
WASATCH COUNTY HEALTH DEPARTMENT	55 SOUTH 500 EAST	HEBER	84032	UT	7	435-654-2700
WASATCH HOMELESS HEALTH CARE	404 SOUTH 400 WEST	SALT LAKE CITY	84101	UT	1	801-364-0058
WAYNE COMMUNITY HEALTH CENTER	128 SOUTH 300 WEST	BICKNELL	84715	UT	10	435-425-3744
WEBER-MORGAN HEALTH DEPARTMENT	477 23RD STREET	OGDEN	84401	UT	1	801-399-7100
WEBER-MORGAN HEALTH DEPARTMENT	48 WEST YOUNG STREET	MORGAN	84401	UT	2	801-845-4033

For-profit Health Care Facilities: NOT ELIGIBLE FOR FUNDING

SITE NAME	ADDRESS	CITY	ZIP CODE	STATE	RUCA	TELEPHONE
CENTRAL UTAH CLINIC	1055 NORTH 500 WEST	PROVO		UT	1	801-584-8498
CENTRAL UTAH CLINIC	525 NORTH MAIN	EPHRAIM	84627	UT	7	
CENTRAL UTAH CLINIC	64 EAST 100 NORTH	GUNNISON	84634	UT	7	

Budget

Budget Assumptions

- The budget assumes a two year project period, with separate budgets for each year.
- Pricing provided in the budget are estimates only.
- A competitive bidding process will be vital for refining network architecture and obtaining final pricing.
- The competitive bidding process of submitting Form 465s, conducting an RFP process, negotiating contracts with vendors, finalizing network design, and finally ordering is expected to take approximately 6 months. Installation can only occur after the competitive bidding process is completed. Therefore, monthly recurring costs are only budgeted for 6 months in Year 1.
- Although we will welcome bids on the entire state project, we anticipate the more likely scenario will be to receive bids on portions of the project and multiple contracts will be awarded.
- All telecommunications services will be ordered as "finished services" which includes network engineering, telecommunications transport (fiber –preferred-, copper, or in some cases, wireless radios), and vendor equipment. It also includes installing fiber from the "curb" to the health care facility, customer premise equipment, and 24/7 technical service through to the health care facility's d-marc.
- Network and Ethernet availability vary widely throughout Utah. Budget estimates varied as well. Therefore, pricing has been divided into regions to take local infrastructure into account.
- There are 134 health care facilities included in this proposal. Of those, 38 are early adopter sites which will be connected in Year 1.
- The remaining 96 health care facilities have committed to participate in the planning process. Once final network design and pricing have been established through the competitive bidding process, we anticipate that approximately 39 sites, or close to half, will connect in Year 2.
- In general, we have planned for backbone infrastructure that will accommodate more sites in the future. Larger health care facilities and Intermountain Healthcare hospitals and clinics have been budgeted for 50-100 Mg per site. Smaller, more rural facilities have been budgeted at 10 Mg per site.
- The South East region is disproportionately expensive. However, this is due to the size of the region and the needs of the facilities in the area.
- Foster collaboration between health networks within the state and region to improve patient care, health professions education and training, and public health.

Year 1 Budget

Network Core	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
1 Gig Backbone core to UU/UTN, 6 mos.	0	5,000	30,000	30,000
1 Gig Intermountain to UU/UTN, 6 mos.	0	5,000	30,000	30,000
Internet2 &/or NLR via UEN	0	0	25,000	25,000

North Region – Wasatch Front to Logan	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
Backbone already in place	0	0	0	0
Install 14 sites, 50Mb-100Mb Ethernet, 6 months	1,354,461	1,200	100,800	1,455,261

East Region – Uintah Basin	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
DS3 Backbone to SLC/UU, 6 months	0	16,300	97,800	97,800
Install 2 sites, 10Mb Ethernet, 6 months	70,000	650	7,800	77,800

Central West – Richfield, Gunnison	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
10 Mb backbone & equipment, 6 mos	255,000	5,000	30,000	285,000
Install 4 sites, 10Mb-100Mb Ethernet, 6 months	447,216	996	23,904	471,120

Central East - Price	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
Use backbone SE-SLC	0	0	0	0
Install 0 sites	0	0	0	0

South Region – St George – Cedar City	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
Backbone already in place	0	0	0	0
Install 10 sites, 50Mb-100Mb, 6 months	1,152,576	1,100	66,000	1,218,576

South Central – Delta/Fillmore to Kanab	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
DS3 Backbone Millard Co – IHC, 6 mos.	1,800	4,500	27,000	28,800
DS3 Backbone Garfield – Core, 6 months	37,540	4,500	27,000	64,540
Install 1 site, 1gig, 6 months	391,383	1,250	7,500	398,883

South East Grand & San Juan Counties	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
Backbone Blanding to SLC, 6 months	310,000	8,000	48,000	358,000
Install 4 sites on Navajo Res using radios	2,004,252	2,799	67,176	2,071,428
Install 3 sites, 10 Mg, 6 months	149,415	920	16,560	165,975

Total Year 1	6,173,643	-	645,040	6,778,183

Year 2 Budget

Network Core	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
1 Gig Backbone core to UU/UTN, 12 mos.	0	5,000	60,000	60,000
1 Gig Intermountain to UU/UTN, 12 mos.	0	5,000	60,000	60,000
Internet2 &/or NLR via UEN	0	0	25,000	25,000

North Region – Wasatch Front to Logan	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
Backbone already in place	0	0	0	0
14 sites, 50Mb-100Mb Ethernet, 12 mos.	0	1,200	201,600	201,600
Install 8 sites, 10 months	505,000	1,200	96,000	601,000

East Region – Uintah Basin	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
DS3 Backbone to SLC/UU, 12 months	0	16,300	195,600	195,600
2 sites, 10Mb Ethernet, 12 months	0	650	15,600	15,600
Install 5 sites, 10 months	175,000	650	32,500	207,500

Central West – Richfield, Gunnison	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
10 Mb backbone & equipment, 12 mos	0	5,000	60,000	60,000
4 sites, 10Mb-100Mb Ethernet, 12 mos	0	996	47,808	47,808
Install 6 sites, 10 Mg, 10 months	375,542	745	44,700	420,242

Central East - Price	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
Use backbone SE-SLC	0	0	0	0
Install 4 sites, 10 Mg, 10 months	240,000	920	36,800	276,800

South Region – St George – Cedar City	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
Backbone already in place	0	0	0	0
10 sites, 50Mb-100Mb, 12 months	0	1,100	132,000	132,000
Install 6 sites, 10Mg-50Mg, 10 months	529,072	866	51,960	581,032

South Central – Delta/Fillmore to Kanab	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
DS3 Backbone Millard Co – IHC, 12 mos.	0	4,500	54,000	54,000
DS3 Backbone Garfield – Core, 12 mos	0	4,500	54,000	54,000
Install 6sites, 10 mg, 10 months	328,253	1,250	75,000	403,253

South East Grand & San Juan Counties	**One-time costs**	**Monthly recurring costs**	**Annual recurring costs**	**Total costs**
Backbone Blanding to SLC, 12 months	0	8,000	96,000	96,000
4 sites on Navajo Res using radios	0	2,799	134,352	134,352
3 sites, 10 Mg, 12 months	0	920	33,120	33,120
Install 4 sites, 10 Mg, 10 months	168,415	920	36,800	205,215

Total Year 2	2,321,282	-	1,542,840	3,864,122
Total Years 1 and 2	**8,494,925**	**-**	**2,187,880**	**10,642,305**

Funding for 15% Non-Covered Costs

The 15% not covered by the FCC will be covered using a combination of funds from individual sites, from the health systems to which they are affiliated, and Utah Telehealth Network funds dedicated to telecommunications and infrastructure improvement.

It is anticipated that there may be portions of the state requiring significant backbone infrastructure improvements. For these, one time funding may be requested from the State of Utah legislature to assist with the 15%. The Utah Telehealth Network and especially the Utah Education Network have a history of success seeking one time funding from the legislature to leverage funding for infrastructure improvements

Intermountain Healthcare will fund the potential 15% or more of uncovered funds by following one or both of the following two strategies:

1. supersede existing, more expensive circuits. As we have experienced in urban areas, the implementation of broadband services is typically less expensive – from a monthly recurring cost perspective; however, the significant one-time capital cost has prevented wide scale adoption.
2. Telemedicine The new broadband circuits anticipated with this proposal will replace or and Telehealth continue to expand and are increasingly becoming an important segment of healthcare. Intermountain has already pledged its support by earmarking hundreds of thousands of dollars annually to embrace Telehealth. Both internal and external methods of support/funding opportunities will continue to be examined in the future.

Self Sustainability

The Utah Telehealth Network is built upon a sustainable model. Investments The Utah Telehealth Network is built upon a sustainable model. The Utah Telehealth Network currently has an annual operating budget of $1.1 million supported through network member fees, user fees, contracts, the University of Utah, and a State of Utah line item. In many cases, telecommunications improvements will replace existing T1 lines. Investments made with FCC funding will strengthen and improve the existing program.

Some locations with multiple T1s, like Utah Navajo Health System, may actually *save* money after Ethernet is installed. Utah Navajo Health System currently has seven T1s. The UNHS network engineer has indicated that one Ethernet connection may have less recurring costs than the current T1s.

UTN, Intermountain, and other partners in this project rely on the current

program administered by the USAC Rural Health Care Division, applying for and receiving discounts for telecommunications lines on behalf of its rural member health care facilities. It has made our current networks possible by keeping infrastructure costs to a reasonable level. If, after the Pilot Program, the FCC decides to provide on-going funding for Ethernet services, there will be many additional sites in Utah who will then be able to participate.

For-Profit Network Cost Assessment

The Central Utah Clinic, a for-profit health care provider with clinics in both urban and rural areas, has been included in the pilot. As final pricing is developed, we will explore the cost-effectiveness for Central Utah while ensuring that they pay their fair share. The accounting will be set up so that for-profit facilities are billed directly by the telecommunications service providers.

Previous Telehealth Experience

The Utah Telehealth Network (UTN) has been coordinating telemedicine activity in Utah since 1996. UTN supports videoconferencing and teleconsults for its 35 member sites. The UTN Advisory Board provides direction to UTN in serving its mission and operations. UTN Advisory Board Members List is included in the Appendix. UTN has developed a robust database to support scheduling of videoconferences, inventory, network design, site profiles, contact information and generate reports. UTN's videoconferencing bridge can connect up to 60 sites at a time and can handle both ISDN and IP traffic. UTN currently hosts over 900 videoconferences per year in support of patient care, education of health professionals, and administrative meetings for health care programs. UTN is self-sustaining through member fees, contracts, University of Utah support and ongoing support from the State.

In addition to UTN activity, Intermountain Healthcare conducts over 1,200 videoconferences per year with the hospitals in their network. The Association of Utah Community Health utilizes videoconferencing for administrative meetings and clinical services

Specific Telehealth Experience

Clinical

- Pioneer in telepharmacy and emergency services including telestroke, teleburn, teletrauma clinical applications
- Clinical telemedicine experience in teleradiology and echocardiography; adult and childrens (Shriners) orthopedics, dermatology, stroke, burn, infectious disease, cardiology specialty services, telepsychiatry and telemental health, infertility evaluation, Children with Special Health Care Needs and Early Intervention case management, diabetic retinopathy screening, genetic counseling, developmental disabilities, spinal cord injury and wound care follow-up
- American Sign Language interpretation

Healthcare Education

- Pioneered nationwide distance learning programs for PhD Nursing students
- Radiology Technician training
- Medical Spanish class
- Telementoring of dental students in rural settings

Continuing Education

- Continuing education experience in Diabetes Brown Bag Lectures, Pediatric Grand Rounds, Disaster Preparedness Training, Huntsman Cancer Institute

Lecture Series, In-service Lectures by the Association of Utah Community Health, Women's Health Regional Meetings

Administrative Meetings

- Hospitals and clinics
- Library Consortium with state libraries and medical libraries in the Midwest and West
- Dialysis Centers
- Research collaborator and grant meetings

Telemedicine Coordination

Utah Telehealth Network

With eleven years of experience coordinating telemedicine activity in Utah, UTN has the staffing and system in place to support the expansion of telehealth. A staff of 9 is dedicated to UTN's network and telemedicine activities: Director, Program Manager, Project Manager, Outreach Coordinator, Videoconferencing Coordinators, Network Engineers (2), Administrative Assistant, and Business Manager.

UTN has a robust database to support scheduling of videoconferences, inventory, network design, site profiles, and contact information. The database was designed and built over the past two years to automate procedures in preparation of anticipated growth in telehealth activity.

UTN's videoconferencing bridge can connect up to 60 sites at a time and that can handle both ISDN and IP traffic. UTN currently hosts approximately 900 videoconferences per year in support of patient care, education of health professionals, and administrative meetings for health care programs.

Each health care facility in UTN has identified staff to serve as key points-of-contact. This includes a site coordinator (to facilitate the development of new telehealth applications), a scheduling coordinator (for schedule videoconferences), a technical contact (to collaborate with in resolving network and videoconferencing issues), and an information security contact.

Coordination with Partners

The Utah Navajo Health System, Utah Department of Health, Utah Association of Local Health Officers, and Association of Utah Community Health each have key personnel who work closely with UTN to assist in scheduling telehealth activities for their affiliated sites. Intermountain Healthcare has its own videoconferencing bridge and key telehealth staff for their network. UTN and Intermountain Healthcare staff work closely together to implement telehealth activities.

Regional Connections

The Utah Telehealth Network is a founding member of the Four Corners Telehealth Consortium, which includes Arizona, New Mexico, Colorado and Utah. The Utah Telehealth Network and the Association of Utah Community Health are charter members of the Northwest Regional Telehealth Resource Center (AK, OR, WA, MT, ID, WY, UT, HI, and the Pacific Islands). Both organizations provide opportunities for partnership and collaboration across state lines.

Request for Waivers

We respectfully request consideration of the following waivers. If our proposal is approved without the waivers, we are prepared to move forward with the Utah ARCHES Project. However, it will increase the challenge and may potentially impact the scope.

Up Front Costs

Waive the requirement that health care facilities pay 100% of the costs up front, with subsequent reimbursement of 85% at a later time. We request the option to negotiate contracts with the telecommunications companies so that health care facilities only pay the 15%.

Telecommunication Providers

If needed, waive the requirement to use only eligible telecommunications providers and allow reimbursement to non-eligible providers on a limited basis. This waiver would only be requested if, after a competitive RFP process, it is determined that the Utah Education Network's or the State's connectivity is the only viable option for select sites. We would seek advance approval by USAC on a site-by-site basis.

Appendices

Maps

Communities in Utah with Telehealth Facilities

Primary Care Health Professional Shortage Area Utah Map

Utah Telehealth Network

Advisory Board

Bylaws

Example Request for Proposal

Letters of Support

University of Utah – Executive Vice President for Health Sciences

Utah Telehealth Network Advisory Board - Chairman

Intermountain Healthcare - Chief Operating Officer

Intermountain Healthcare – Chief Information Officer

Utah Navajo Health System

Association of Utah Community Health

Utah Association of Local Health Departments

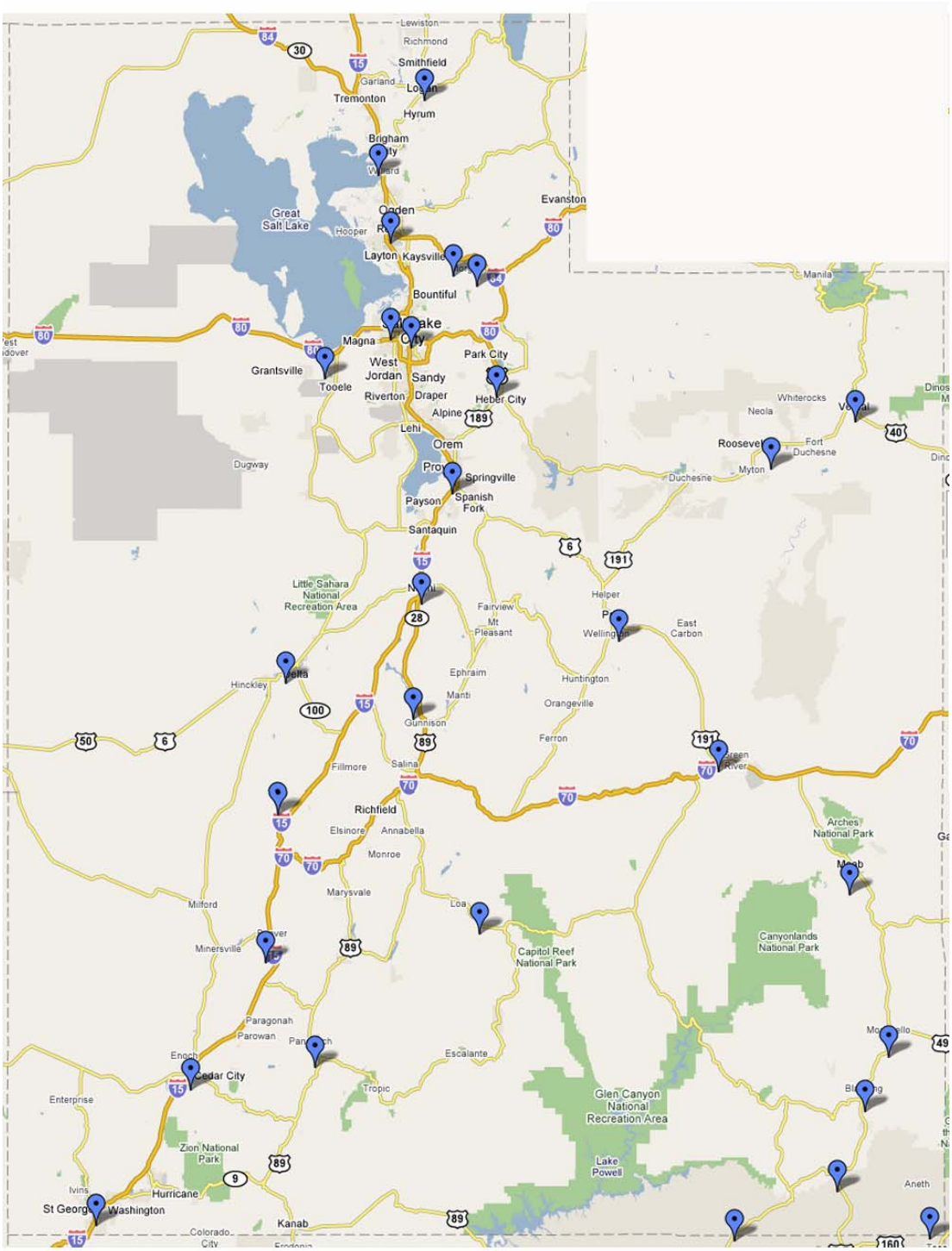
Utah Department of Technology Services – Chief Information Officer

Utah Education Network

Utah Department of Health

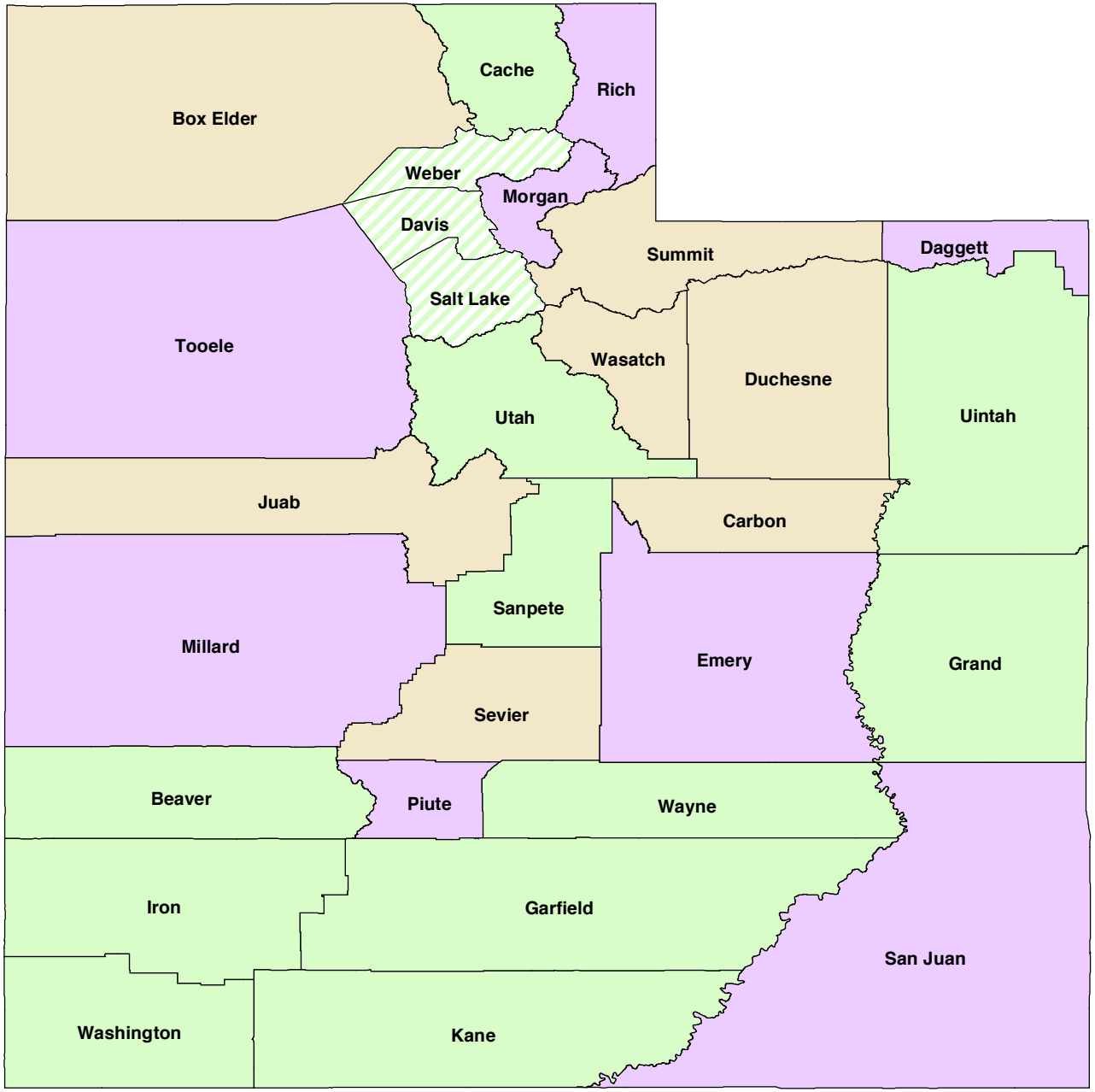
HealthInsight

Communities in Utah with Telehealth



Utah Primary Care HPSAs by County and Type of HPSA

- Geographic area, full-county
- Low-income population, full-county
- Low-income population, partial-county
- Undesignated county



For further information, please contact:

Office of Primary Care and Rural Health

Mailing Address:
P.O. Box 142005
Salt Lake City, Utah 84114-2005

Street Address:
288 North 1460 West
Second Floor
Salt Lake City, Utah 84116

Phone: (801) 538-6113

Fax: (801) 538-6387

Web: http://health.utah.gov/primarycare

Updated: June 6, 2006

Utah Telehealth Network Advisory Board
As of 4/12/2007

Rural Representative **Brad LeBaron, Chair** President and CEO Uintah Basin Medical Center 250 West 300 North Roosevelt UT 84066 435-722-6163 office blebaron@ubmc.org	Member Hospital, Clinic, Health Department. **Kathy Froerer, MHEd, Co-Chair** Executive Director Utah Association of Local Health Officers 726 North 1890 West Provo UT 84601 801-377-1264 office kfroerer@utah.gov
Education and Research **Carole A. Gassert, PhD, RN, FACMI, FAAN** Associate Professor Associate Dean, Informatics & Technology University of Utah, College of Nursing 10 South 2000 East Salt Lake City, UT 84112-5880 801-585-5680 office carole.gassert@nurs.utah.edu 801-585-5681 [asst: Kerry McKinney] kerry.mckinney@nurs.utah.edu	UUHSC **Wayne Peay** Director Eccles Health Sciences Library University of Utah 10 North 1900 East Salt Lake City UT 84112-5890 801-581-8771 office wayne@lib.med.utah.edu [asst Sherilyn Sandberg] ssandberg@lib.med.utah.edu
Other Organizations **Mike Petersen** Executive Director Utah Education Network Eccles Broadcast Center 101 Wasatch Drive Salt Lake City UT 84112-1792 mpetersen@media.utah.edu 801-581-6991 [asst: Denise Elwood] 801-585-6013 delwood@media.utah.edu	Rural **Craig Davidson** CEO Beaver Valley Hospital PO Box 1670 Beaver, UT 84713 435-438-2531 office cdavidson@beaverhospital.net
Member Hospital, Clinic, Health Department **Jon D. Hoopes** Regional Vice President Intermountain Healthcare 36 S. State Street Salt Lake City, Utah 84111 801-442-2821 office jon.hoopes@intermountainmail.org Christy Miller	UUHSC **John Bohnsack, M.D.** Division Chief Associate Chair Clinical Services Dept. of Pediatrics 295 Chipeta Way Salt Lake City Utah 84108 john.bohnsack@hsc.utah.edu 801-587-7416 [asst: Carole P. Hoyt] 801-587-7417 Fax Carole.Hoyt@hsc.utah.edu

Utah Telehealth Network Advisory Board
As of 4/12/2007

Other Organizations **Bette Vierra** Executive Director Association of Utah Community Health 860 East 4500 South, Suite 206 Salt Lake City, Utah 84107 801-974-5522 office 801-716-4601 direct 801-633-4866 cell bettevierra@auch.org	Member Hospital, Clinic, Health Department **Michael Jensen** Utah Navajo Health System Montezuma Creek Community Health Center East Highway 262 Montezuma Creek, Utah 84534 435-651-3291 office mjensen@unhsinc.org
At-Large **Nancy Neff, CEO** Southwest Utah Community Health Center 168 North 100 East St. George, Utah 84770 435-879-5101 office nancy@chcsg.org	Rural **D.Kim Openshaw** Utah State University Dept. of Family, Consumer & Human Development UMC 2700 Logan, Utah 84322-2700 435-797-7434 office d.k.openshaw@usu.edu
At-large **Joy Khader, MS APRN** Pediatric Education Services Primary Children's Medical Center 100 North Medical Drive Salt Lake City, Utah 84113 801-662-3514 office joy.khader@intermountainmail.org	*Ex-officio, non-voting* **Marta J. Petersen, M.D.** Director Utah Telehealth Network 585 Komas Drive, Suite 204 Salt Lake City UT 84108 801-585-9624 office marta.petersen@hsc.utah.edu
Ex-officio, non-voting **Deb LaMarche** Program Manager Utah Telehealth Network 585 Komas Drive, Suite 204 Salt Lake City, Utah 84108 801-587-6185 office 801-339-5220 pager 801-690-3406 cell deb.lamarche@utahtelehealth.net	

UTAH TELEHEALTH NETWORK (UTN)
ADVISORY BOARD BYLAWS

1. Purpose
   The purpose of these UTN Advisory Board Bylaws is to create an Advisory Board which will provide direction to UTN in serving its mission and operations.

2. Mission of the Utah Telehealth Network
   To expand access to health care services and resources through innovative application of technology, serving healthcare providers, patients and the citizens of the State of Utah.
   2.1. Provide advanced clinical services
   2.2. Facilitate collaboration
   2.3. Support education and research
   2.4. Encourage the development of telehealth resources & services

3. Board Responsibilities
   The Advisory Board will provide advice and guidance on the following matters:
   3.1. Planning – Develop annual strategic plan and maintain long range objectives.
   3.2. Policies – Adopt and approve policies guiding the operation, services and resources of the network.
   3.3. Budget – Review and approve annual budget for UTN. Review and approve fee structure(s).
   3.4. Member services – Approve member applications and network services.
   3.5. Government relations – Develop and maintain government relationships with local and state entities, including the Governor's Office, the Utah Legislature, and relevant state agencies.

4. University of Utah Responsibilities
   The business affairs of UTN will be managed by the Director with the advice and guidance of the Advisory Board. These responsibilities include:
   4.1. Administration – Provide administrative management (HR services, accounting management, grants management, risk management, and contracting) for UTN.
   4.2. Support – UTN will reside within UUHSC Information Technology Services (ITS), including University personnel and infrastructure support.
   4.3. Resource – Share technical and clinical expertise in support of new technologies and applications.

5. Members
   5.1. The UTN Advisory Board shall consist of up to fifteen (15) voting members representing the diverse community served by UTN.
   5.2. The membership of the UTN Board shall consist of:
      5.2.1. Four (4) members representing rural Utah, at least one of which will be a community stakeholder.
      5.2.2. Two (2) representatives of the University of Utah Health Sciences Center.
      5.2.3. Three (3) network members representing hospitals, clinics, health departments
      5.2.4. One (1) member representing education and research
      5.2.5. Two (2) members representing organizations such as Utah Education Network, Utah Hospital Association, Utah Health Information Network, Association of Utah Community Health.
      5.2.6. Three (3) at-large members

5.3. Membership on the UTN Board requires a nomination by a current member of the UTN Board and a majority vote in favor of the nomination. Membership is reviewed annually by the Board.

5.3.1. Terms will last three (3) years. Board members may serve up to three (3) consecutive terms.

5.3.2. Board members are expected to participate in the majority of scheduled meetings.

5.3.3. Board members may be removed from the Board for failure to meet the participation requirement.

6. Officers

6.4. The Chairperson and Vice Chair of the UTN Board shall be elected from among the Board Members by the UTN Board.

6.4.1. The term for Chairperson will be two years. Chairs may serve up to two (2) consecutive terms.

6.4.2. The Vice Chair will be elected with the expectation that the Vice Chair will succeed the Chair.

7. Miscellaneous

7.5. The Director and Program Manager of the UTN and the Director of UUHSC ITS shall be ex officio, non-voting, members of the UTN Board.

7.6. The UTN Board may constitute committees and task forces to address specific needs or activities of the UTN.

7.7. The UTN Board shall meet at least four (4) times each calendar year.

7.8. Participation by a minimum of fifty percent (50%) of the board members constitutes a quorum for the transaction of business.

7.9. Meetings shall be conducted with *Robert's Rules of Order Newly Revised* where consistent with these bylaws.

7.10. The bylaws may be amended or repealed by a vote of two-thirds (2/3) of the total membership of the UTN Board.

APPROVED AND ADOPTED this 28 day of November, 2006

APPROVED by the University of Utah

By: _____

Title: VP

Date: 11-22-06

ADOPTED by the UTN Advisory Board

_____
Brad LeBaron, Chair

_____
Kathy Froerer, Vice chair

Craig Val Davidson

Wayne Peay

Jon Hoopes

Carole Gassert

Bette Vierra

Joy Khader

D. Kim Openshaw

John Bonsack

Michael Jensen

Mike Petersen

Nancy Neff

UTAH TELEHEALTH NETWORK
MEMORANDUM OF UNDERSTANDING

This memorandum of understanding, regarding the Utah Telehealth Network and its relationship to the University of Utah, is made effective this 28th day of Nov., 2006, between the University of Utah and the Utah Telehealth Network (UTN) Advisory Board.

1. Mission of the Utah Telehealth Network
   To expand access to health care services and resources through innovative application of technology, serving healthcare providers, patients and the citizens of the State of Utah.
   1.1. Provide advanced clinical services
   1.2. Facilitate collaboration
   1.3. Support education and research
   1.4. Encourage the development of telehealth resources & services

2. Utah Telehealth Network Advisory Board Responsibilities
   The Advisory Board will provide advice and guidance on the following matters:
   2.1. Planning – Develop annual strategic plan and maintain long range objectives.
   2.2. Policies – Adopt and approve policies guiding the operation, services and resources of the network.
   2.3. Budget – Review and approve annual budget for UTN. Review and approve fee structure(s).
   2.4. Member services – Approve member applications and network services.
   2.5. Government relations – Develop and maintain government relationships with local and state entities, including the Governor's Office, the Utah Legislature, and relevant state agencies.

3. University of Utah Responsibilities
   The University of Utah will have primary responsibility for the operation of UTN. The business affairs of UTN will be managed by the Director with the advice and guidance of the Advisory Board. These responsibilities include:
   3.1. Administration – Provide administrative management (Human Resource services, accounting management, grants management, risk management, and contracting) for UTN.
   3.2. Support – UTN will reside within UUHSC Information Technology Services (ITS), including University personnel and infrastructure support.
   3.3. Resource – Share technical and clinical expertise in support of new technologies and applications.

4. Term
   This memorandum of understanding will continue until terminated by either the University of Utah or the UTN Advisory Board, upon not less than 90 days prior notice.

The parties support the mission of the Utah Telehealth Network and agree to a working relationship as outlined above.

UNIVERSITY OF UTAH

By: _____ *(signature)*

A. Lorris Betz, M.D., Ph.D.
Senior Vice President for Health Sciences
Executive Dean, School of Medicine
University of Utah

Date: 11-22-06

UTN ADVISORY BOARD

By: _____ *(signature)*

Bradley D. LeBaron
Chair, Utah Telehealth Network Advisory Board
CEO and President, Uintah Basin Medical Center

Date: 11-29-06

EXAMPLE

Request for Proposal
for Wide-Area-Network (WAN)
100Mbps and 1000Mbps
Ethernet Services

RFP #

Issued October 19, 2006

Questions regarding this RFP should be directed to:

Becca Morley
University of Utah Purchasing Dept.
1901 E. South Campus Drive Rm. 151
Salt Lake City, UT 84112-9351
Tel.(801) 581-5729 Fax (801) 581-8609
E-Mail: bmorley@purchasing.utah.edu

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ATTACHMENTS:

The University of Utah
Office of the Senior Vice President
for Health Sciences

A. Lorris Betz, M.D., Ph.D.
Senior Vice President for Health Sciences
Executive Dean, School of Medicine
CEO, University Health Care

May 4, 2007

Commissioners
Federal Communications Commission
Office of the Secretary
9300 East Hampton Drive
Capitol Heights, MD 20743

Re: Federal Communications Commission (FCC) Rural Health Care Pilot Program

Dear Commissioners:

The University of Utah Health Sciences Center strongly supports the Utah ARCHES Project proposal to FCC for its Rural Health Care Pilot Program. The University of Utah, on behalf of the Utah Telehealth Network (UTN), will be legally and financially responsible for the conduct of the activities supported by the pilot program.

This project will improve the quality of healthcare for the citizens of Utah by building upon the existing IT infrastructure and increasing broadband capacity in order to advance innovative E-health services throughout the state.

The University of Utah is home to the only medical school in the state. The mission includes patient care, research, education and outreach. The Utah Telehealth Network has furthered our outreach efforts to patients and health care providers of Utah. Increased broadband capacity will enable additional specialty services to rural Utah and foster collaboration with healthcare systems in the state.

With a history of collaboration and telehealth experience, Utah is poised to take advantage of this tremendous opportunity to improve health care for all Utahns.

I urge you to give the Utah ARCHES Project proposal your utmost consideration.

Sincerely,

A. Lorris Betz, M.D., Ph.D.
Senior Vice President for Health Sciences

Senior Vice President for Health Sciences
175 N. Medical Drive East
Salt Lake City, Utah 84132-5901

Uintah Basin Medical Center

250 West 300 North 75-2
Roosevelt, Utah 84066

(435) 722-4691
Fax (435) 722-9291

May 4, 2007

FCC Commissioners
Federal Communications Commission
Office of the Secretary
9300 East Hampton Drive
Capitol Heights, MD 20743

Re: FCC Rural Health Care Pilot Program

Dear FCC Commissioners:

I would like to express strong support for Utah ARCHES Project proposal to the FCC for its Rural Health Care Pilot Program. This project will improve the quality of healthcare for the citizens of Utah by building upon the existing IT infrastructure and increasing broadband capacity in order to advance innovative E-health services.

A state-wide broadband network will address the challenges faced by rural health care providers in Utah. The growing demand for telehealth and the adoption of health information technology, such as electronic health records, are driving the need for faster and more reliable network connections.

I continue to be amazed by the IT infrastructure demands required in our industry, the rate of growth is near doubling each year. As the healthcare industry continues its adoption of the myriad IT solutions that will be required I doubt that the pace of growth will slacken for years to come. The Universal Health Services program is of great benefit to rural healthcare. The Rural Health Care Pilot will facilitate adoption of technology and result in improvements in health outcomes, patient safety, and reduced expenses and the list goes on from there. We need your help to do what we want and need to do.

As the Utah Telehealth Network Advisory Board Chairman I am happy to commit our Board's oversight and management for the project.

With a history of collaboration and telehealth experience, Utah is poised to take advantage of this tremendous opportunity to improve health care for all Utahns.
I give this effort my strong support and hope you will give the Utah ARCHES Project proposal every possible consideration.

Sincerely,

Bradley D. LeBaron, FACHE
President & CEO

Intermountain Healthcare

36 South State Street, 16th Floor
Salt Lake City, UT 84111-1486
801.442.2000

May 4, 2007

FCC Commissioners
Federal Communications Commission
Office of the Secretary
9300 East Hampton Drive
Capitol Heights, MD 20743

Re: FCC Rural Health Care Pilot Program

Dear FCC Commissioners:

I would like to express strong support for Utah ARCHES Project proposal to the FCC for its Rural Health Care Pilot Program. This project will improve the quality of healthcare for the citizens of Utah by building upon the existing IT infrastructure and increasing broadband capacity in order to advance innovative E-health services.

Our organization is investing heavily to improve the clinical computer applications in our rural hospitals. We have facilities in several rural communities in Utah including, Delta, Ephraim, Fillmore, Heber City, Mt. Pleasant, Manti, Panguitch, Richfield, Salina, and Tremonton.

We are implementing PACs systems for imaging services, electronic medical records, and other clinical information systems. These systems will improve the tools our physicians, nurses, and other providers use to provide high quality and safer health services to the patients.

A state-wide broadband network will address the challenges faced by rural health care providers in Utah. The ability to share information among the different providers improves patient care by reducing the number of tests needed by patients and shortening the time needed for physicians to make accurate diagnosis. When patients need to be transferred to another institution, a state-wide broadband network will allow their information to accompany the patient.

With a history of collaboration, Utah is poised to take advantage of this tremendous opportunity to improve health care for all Utahns.

I give this effort my strong support and hope you will give the Utah ARCHES Project proposal every possible consideration.

Sincerely,

Morgan David Busch

Morgan David Busch
Operating Officer
Intermountain Healthcare Rural Region

Intermountain
Healthcare

Information Systems

4646 West Lake Park Blvd.
Salt Lake City, UT 84120

May 4, 2007

FCC Commissioners
Federal Communications Commission
Office of the Secretary
9300 East Hampton Drive
Capitol Heights, MD 20743

Re: FCC Rural Health Care Pilot Program

Dear FCC Commissioners:

I would like to express my strong support for the Utah ARCHES Project proposal, which is being submitted to the FCC for its Rural Health Care Pilot Program. This project will improve the quality of healthcare for the citizens of Utah by building upon the existing IT infrastructure and by increasing broadband capacity in order to advance innovative E-health services.

A state-wide broadband network will address the challenges faced by rural health care providers in Utah. The growing demand for telehealth and the adoption of health information technology, such as electronic medical records (EMR), are driving the need for faster and more reliable network connections.

Intermountain Healthcare has a long history of collaboration and telehealth experience. These efforts in the past have always benefited the communities of Utah which we serve. In this case, we are pleased to be joining forces with the Utah TeleHealth division of the University of Utah and others to jointly lead this project.

I give this effort my strong support and hope you will give the Utah ARCHES Project proposal every possible consideration.

Sincerely,

Marc Probst
Vice President, CIO
Intermountain Healthcare

May 4, 2007

FCC Commissioners
Federal Communications Commission
Office of the Secretary
9300 East Hampton Drive
Capitol Heights, MD 20743

Re: FCC Rural Health Care Pilot Program

Dear FCC Commissioners:

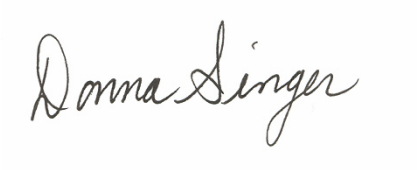
I would like to express strong support for Utah ARCHES Project proposal to the FCC for its Rural Health Care Pilot Program. This project will improve the quality of healthcare for the citizens of Utah by building upon the existing IT infrastructure and increasing broadband capacity in order to advance innovative E-health services.

A state-wide broadband network will address the challenges faced by rural health care providers in Utah. The growing demand for telehealth and the adoption of health information technology, such as electronic health records, are driving the need for faster and more reliable network connections.

Utah Navajo Health System, Inc. is fully committed to partnering in this project to help bring improved healthcare services to southeastern Utah by leveraging the use of technology. The Utah ARCHES project will build an enhanced IT infrastructure which is critical in maintaining and improving the healthcare services we are able to provide for the people in the communities we serve in southeastern Utah.

With a history of collaboration and telehealth experience, Utah Navajo Health System is prepared to partner with the Utah Telehealth Network in this tremendous opportunity to improve health care for all Utahns. I give this effort my strong support and hope you will give the Utah ARCHES Project proposal every possible consideration.

Sincerely,



Donna Singer, CEO
Utah Navajo Health System, Inc.

Association for
Utah Community Health
Supporting Health Care for the Underserved

May 4, 2007

FCC Commissioners
Federal Communications Commission
Office of the Secretary
9300 East Hampton Drive
Capitol Heights, MD 20743

Re: FCC Rural Health Care Pilot Program

Dear FCC Commissioners:

On behalf of the eleven Federally Qualified Health Centers (FQHCs) in Utah, who provide comprehensive primary and preventive health care services at 28 sites, I am writing to express strong support for the Utah ARCHES Project - Rural Health Care Pilot Program proposal to the FCC. This project will improve the quality of healthcare for the citizens of Utah by building upon the existing IT infrastructure and increasing broadband capacity in order to advance innovative E-health services.

As the primary care association in Utah, the Association for Utah Community Health (AUCH) supports its member community, farm worker, homeless and reproductive health centers in their efforts to extend quality, comprehensive primary and preventive health services to medically underserved individuals and families. The seven FQHCs located in rural/frontier areas in Utah participate in the AUCH member video and E-health initiatives. Often, however, their participation is inhibited by transmission capacity limitations. A state-wide broadband network will address the challenges faced by rural health care providers in Utah.

AUCH is committed to full partnership with the other organizations implementing the Utah ARCHES Project and to service as a member of both the project management team and the Utah Telehealth Network Advisory Board. AUCH will represent and facilitate the participation of Utah's FQHCs in the Project.

I urge every possible consideration be given the Utah ARCHES Project. With a history of collaboration and telehealth experience, Utah is poised to take advantage of this tremendous opportunity to improve health care for all Utahns.

Sincerely,

Bette Vierra

Bette Vierra
Executive Director

860 East 4500 South, Suite 206 Salt Lake City, Utah 84107 Tel 801.974.5522 Fax 801.974.5563 www.auch.org

Utah Association of Local Health Departments

Kathy Froerer, MHEd
Executive Director

Phil Wright, MS, EHS
President
Wasatch County Health Department

Gary House, MPH
Past President
Weber-Morgan Health Department

Lloyd Berentzen, MBA
President Elect
Bear River Health Department

May 4, 2007

FCC Commissioners
Federal Communications Commission
Office of the Secretary
9300 East Hampton Drive
Capitol Heights, MD 20743

Re: FCC Rural Health Care Pilot Program

Dear FCC Commissioners:

I would like to express strong support for Utah ARCHES Project proposal to the FCC for its Rural Health Care Pilot Program. This project will improve the quality of healthcare for the citizens of Utah by building upon the existing IT infrastructure and increasing broadband capacity in order to advance innovative E-health services.

A state-wide broadband network will address the challenges faced by rural health care providers in Utah. The growing demand for telehealth and the adoption of health information technology, such as electronic health records, are driving the need for faster and more reliable network connections.

The Utah Association of Local Health Officers has worked with UTN for the past four years. The twelve local health departments have utilized their video conferencing capacity to attend meetings without traveling. The county commissioners have used our system and equipment to attend their legislative meetings and updates. This system is more reliable and more robust than the State system we were connected to before.

We are very committed to this project. It will give greater capacity to a proven entity that is a great catalyst for collaboration and growth. There are significant portions of our state that are categorized as Frontier or Rural. Developing better connectivity for these areas will allow them to be part of a much broader telecommunications system.

With a history of collaboration and telehealth experience, Utah is poised to take advantage of this tremendous opportunity to improve health care for all Utahns. I give this effort my strong support and hope you will give the Utah ARCHES Project proposal every possible consideration.

Sincerely,

Kathy Froerer, MHED
Executive Director, UALHO

STATE OF UTAH
Department of Technology Services

J. STEPHEN FLETCHER
CIO
Executive Director

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

May 4, 2007

FCC Commissioners
Federal Communications Commission
Office of the Secretary
9300 East Hampton Drive
Capitol Heights, MD 20743

Re: FCC Rural Health Care Pilot Program

Dear FCC Commissioners:

I would like to express strong support for Utah ARCHES Project proposal to the FCC for its Rural Health Care Pilot Program. This project will improve the quality of healthcare for the citizens of Utah by building upon the existing IT infrastructure and increasing broadband capacity in order to advance innovative E-health services.

A state-wide broadband network will address the challenges faced by rural health care providers in Utah. The growing demand for telehealth and the adoption of health information technology, such as electronic health records, are driving the need for faster and more reliable network connections.

The ARCHES Project would greatly improve the ability for several State and Local Health programs to better deliver applications and information. We currently have many sites throughout the state that use dial up communications services to connect to the internet to access applications to send and receive data. Many areas do not wish to connect to the internet over those connections because of the slowness and inefficiency of doing business through that medium. They prefer to use paper and fax machines to facilitate their business. We believe that by providing high speed internet access for these rural areas throughout the state we would be able to deliver additional and better services to the citizens of Utah.

For the reasons listed above we commit our support and resources to the Rural Health Care Pilot Program and feel that by participating we will be able to facilitate a much elevated and outstanding enterprise network.

With a history of collaboration and telehealth experience, Utah is poised to take advantage of this tremendous opportunity to improve health care for all Utahns. I give this effort my strong support and hope you will give the Utah ARCHES Project proposal every possible consideration.

Sincerely,

J. Stephen Fletcher
Executive Director

One State Office Building, 6th Floor, Salt Lake City, UT 84114 • telephone (801) 538-3298 • facsimile (801) 538-3622

UTAH EDUCATION NETWORK
WWW.UEN.ORG

May 4, 2007

FCC Commissioners
Federal Communications Commission
Office of the Secretary
9300 East Hampton Drive
Capitol Heights, MD 20743

Re: FCC Rural Health Care Pilot Program

Dear FCC Commissioners:

The Utah Education Network (UEN) would like to express strong support for Utah ARCHES Project proposal to the FCC for its Rural Health Care Pilot Program. This project will improve the quality of healthcare for the citizens of Utah by building upon the existing IT infrastructure and increasing broadband capacity in order to advance innovative E-health services.

Given our experience in implementing and supporting broadband Ethernet projects for the State of Utah in both public and higher education, UEN has participated in both the proposal development team and technical planning team for the ARCHES proposal to provide key technical engineering and strategic planning. UEN looks forward to participating as a key partner, in working with the health care providers and recipients in this program and lending technical expertise, planning, and shared resources where feasible for a successful ARCHES implementation.

A state-wide broadband network will address the challenges faced by rural health care providers in Utah. The growing demand for telehealth and the adoption of health information technology, such as electronic health records, are driving the need for faster and more reliable network connections.

With a history of collaboration and telehealth experience, Utah is poised to take advantage of this tremendous opportunity to improve health care for all Utahns. I give this effort my strong support and hope you will give the Utah ARCHES Project proposal every possible consideration.

Sincerely,

Dr. Michael Petersen
Executive Director
Utah Education Network

Utah Department of Health
Executive Director's Office

David N. Sundwall, M.D.
Executive Director

A. Richard Melton, Dr. P.H.
Deputy Director

Allen Korhonen
Deputy Director

State of Utah

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

May 4, 2007

FCC Commissioners
Federal Communications Commission
Office of the Secretary
9300 East Hampton Drive
Capitol Heights, MD 20743

Re: FCC Rural Health Care Pilot Program

Dear FCC Commissioners:

I would like to express strong support for the Utah ARCHES Project proposal to the FCC for its' Rural Health Care Pilot Program. This project will improve the quality of health care for the citizens of Utah by building upon the existing IT infrastructure and increasing broadband capacity in order to advance innovative e-Health services.

A statewide broadband network will address the challenges faced by rural health care providers in Utah. The growing demand for telehealth and the adoption of health information technology, such as electronic health records, are driving the need for faster and more reliable network connections.

The Utah Department of Health (UDOH) is eager to advance the development of the infrastructure necessary to support Utah's growing and progressive e-Health initiatives to improve and protect the health of Utahns. Building health information technology (HIT) capacity is a cornerstone of improving access to care, quality of care, and reducing health care costs.

The Utah Department of Health is also eager to improve the capacity of the UTN to support video conferencing. UDOH uses video conferencing as a means to communicate with and deliver continuing education to Utah's public health workforce, which includes local health departments, UDOH, and other partner agencies in the health sector. The ability for rural partners to video conference instead of travel has greatly increased participation and collaboration on important public health issues.

With a history of collaboration and telehealth experience, Utah is poised to take advantage of this tremendous opportunity to improve health care for all Utahns. I give this effort my strong support and hope you will give the Utah ARCHES Project proposal every possible consideration.

Sincerely,

David N. Sundwall
Executive Director

Utah Department of Health
Promote Prevent Protect

288 North 1460 West • Salt Lake City, UT
Mailing Address: P.O. Box 141000 • Salt Lake City, UT 84114-1000
Telephone (801) 538-6111 • Facsimile (801) 538-6306 • *www.health.utah.gov*

HealthInsight

A PARTNERSHIP FOR THE FUTURE OF HEALTH CARE

May 1, 2007

FCC Commissioners
Federal Communications Commission
Office of the Secretary
9300 East Hampton Drive
Capitol Heights, MD 20743

Re: FCC Rural Health Care Pilot Program

Dear FCC Commissioners:

HealthInsight enthusiastically supports the Utah ARCHES Project proposal to create a broadband network in Utah that is dedicated to health care. Once this network is implemented it will provide endless opportunity for managing, measuring, and improving the quality of health care in Utah—and nationally, when connected to the nationwide broadband network.

The healthcare system in Utah ranges across urban and frontier areas, with large organized systems and small, independent practices. Users of electronic medical records are in all phases of progression, from those who are utilizing their systems to effectively manage and improve care, to those with little or no computer or Internet access. This project will help bridge the gap for those providers who would not otherwise have been able to "get connected".

As the Quality Improvement Organization (QIO) for Utah, *HealthInsight* has been focusing a great deal of attention towards the adoption of health information technology (HIT) in Utah. Much of our work is geared towards helping health care providers use health information technology (HIT) more effectively in the management of the care delivery process.

- Through our Doctors Office Quality – Information Technology (DOQ-IT) project, we have assisted 180 clinics through various stages of implementation of electronic health records.
- Through our work, as partners on research grants, including the AHRQ Value grant, INFORM and the CDC grant, IMPART, we have implemented electronic decision support mechanisms in rural clinics.

Other work is focused on a broader adoption of HIT.

- *HealthInsight* is a member of the Utah Health Information Network (UHIN), a regional network serving as a hub for processing administrative health information since 1993.
- Through our collaboration with the Utah Health Information Network (UHIN), we participated in an AHRQ grant to develop and implement a statewide network for sharing of clinical health care information.

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Salt Lake City, UT 84107
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Phone: 702-385-9933 • Fax: 702-385-4586

www.healthinsight.org

HealthInsight is also facilitating the work of the Utah Partnership for Value Driven Health Care, a community collaboration promoting Secretary Leavitt's national quality initiative based on "Four Cornerstones":

- Connecting the system, including standards and support for e-health
- Measuring and publishing currently available quality data and partnering with providers to develop and use additional measures
- Measuring and publishing price information utilizing an "Episodes of Care" model
- Creating positive incentives, including rewarding those who offer, provide, and choose value (Quality/Price)

The Rural Health Care Pilot Program will support this work by "connecting" the system and providing greater capacity throughout the state.

HealthInsight is pleased to support this project as we continue to provide free consultation on the adoption and use of health information technology to improve patient care to our partner clinics throughout the state. Nearly all of the rural health centers and federally qualified health centers in Utah are included.

We look forward to working with more "connected" providers as they learn to more fully utilize their systems to improve their care processes.

Sincerely,

Marc H. Bennett
Chief Executive Officer